BRITISH MEDICAL JOURNAL

LONDON SATURDAY MAY 8 1937

THE HABITUAL ABORTION AND STILLBIRTH SYNDROME AND LATE PREGNANCY TOXAEMIA

VITAMIN E AND THE PROLAN-PROGESTERONE MECHANISM

BY

JAMES YOUNG, D.S.O., M.D., F.R.C.S., F.C.O.G.

Professor of Obstetrics and Gynaecology, University of London; Director of Department of Obstetrics and Gynaecology, British Post-Graduate Medical School, Hammersmith Hospital, London; Consulting Obstetrician, Edinburgh Royal Maternity and Simpson Memorial Hospital; Consulting Gynaecologist, Royal Infirmary, Edinburgh

In previous communications I have published evidence for the view that the factors responsible for late pregnancy toxaemia tend, in a high proportion of the other pregnancies of women so susceptible, to cause abortion, accidental haemorrhage, etc., without toxaemia (Young, 1914, et seq.). From a study of the reproductive history of 220 successive cases of toxaemia at the Edinburgh Royal Maternity Hospital I (1927) concluded "that women with an eclamptic history commonly have resident within their body some morbid influence, which is not inconsistent with good health between their pregnancies, but which is inconsistent with the normal continuance of pregnancy to term. Many of the damaged pregnancies in such women end in abortion, some end in premature birth or stillbirth, but only in comparatively few such pregnancies does this constant and imminent *x* factor culminate in a toxaemic attack."

TABLE I.—*The Habitual Abortion and Stillbirth Syndrome in Toxaemia*

Case	Pregnancy	Case	Pregnancy
1 (1543)	(1–7) Normal (8–10) Abortion (11) Eclampsia	6 (1442)	(1–2) Normal (3) Premature stillbirth. No toxaemia (4) Eclampsia
2 (827)	(1–2) Normal (3–7) Abortion (8) Eclampsia	7 (1393)	(1) Full term. Toxaemia (2) Accidental haemorrhage. Premature stillbirth. No toxaemia
3 (1551)	(1–2) Abortion (3) Eclampsia	8 (1312)	(1) Normal (2) Abortion. No toxaemia (3) Accidental haemorrhage. Premature stillbirth. Toxaemia (4) Accidental haemorrhage. Premature stillbirth. No toxaemia
4 (1764)	(1) Normal (2) Premature live birth (3) Normal ? (4) Stillbirth (5) Premature live birth (6) Eclampsia		
5 (1422)	(1) Premature stillbirth (2–3) Abortion (4) Eclampsia		

In Table I. which represents the reproductive history of cases selected from a large number of similar clinical records, these facts are brought out in a striking manner. They exhibit the frequently recurring nature of the phenomenon and demonstrate that this may begin with the first pregnancy or, alternatively, it may only appear during subsequent pregnancies as an "acquired" taint. Further, they bring out the important circumstance that the toxaemic element, in general, only obtrudes itself where the damaged pregnancy has advanced to the later months. For a fuller study of these questions and for the data on which we have built up the hypothesis of placental intoxication in an attempt to correlate the clinico-pathological data embraced within the toxaemia phenomenon the reader is referred to the previous papers mentioned. These papers also present evidence for the contention that the common attribution of the recurring obstetric disasters of such women to a persisting "nephritic" factor (chronic nephritis, low reserve kidney, etc.) has for long diverted attention from the realities of the situation and has sterilized much sincere effort directed to the elucidation of primary factors.

The X Factor and Recent Discoveries

Recent investigations have opened out to us a possible new avenue of approach in our search for the missing factor in the habitual abortion–stillbirth–toxaemia syndrome. This evidence has come from two directions. In the first place, since Wiesner (1931) showed that a negative A.-Z. reaction in a living pregnancy implied a high risk of abortion or premature birth, the luteinizing factor obtained from pregnancy urine or the corpus luteum hormone itself has been used with considerable success in the treatment of habitual abortion (Johnstone *et al.*, 1932; Krohn *et al.*, 1935; Kane, 1936). We have ourselves the completed and consecutive histories of seventeen women who between them had fifty-one successive pregnancies ending in abortion, premature stillbirth, stillbirth, or early neo-natal death before coming under treatment. In seventeen subsequent pregnancies under treatment with urinary prolan there were fifteen which ended in the birth of a surviving child—that is, a 100 per cent. failure was transformed into an 88.2 per cent. success. The circumstances attending the administration of prolan and progesterone strongly suggest that it operates in the form of a true substitution therapy. At the same time the pregnancy gonadotropic test may be positive in cases which respond to the therapy, and this makes it necessary for us, in the absence of quantitative data, to exercise caution in our interpretation of the phenomena. This attitude of caution is all the more necessary in that successful therapy is obtained with a unit dose of hormone which is infinitesimal in comparison with the quantities known to exist in normal pregnancy. Thus, whereas 100 rat units of prolan twice weekly may be clinically sufficient, it is known that the excretion of this hormone in healthy pregnancy reaches several and often many thousands of rat units per litre of urine.

Significance of the Results

In Tables II, III, and IV we have collated our personal cases, completed and otherwise. To appreciate the full significance of these results it is important to recognize that, in so far as they refer to women who present themselves for treatment because of their history of recurring obstetric disaster, we can naturally to a large extent eliminate from the history such irrelevant causes of repeated abortion as intentional interference. Indeed, in the majority of instances their failure to carry is to such women a source of great distress. Further, it is to be noted that in all cases the Wassermann reaction is proved to be negative and there is no detectable pathology to account for their symptoms, such as retroflexion and deep cervical laceration.

The second important line of advance is based upon the recognition of the part which essential food substances play in the nutritional maintenance of the pregnant state.

TABLE II.—*Habitual Abortion, etc. Pregnancy Test Negative*

Case No.	Age	Previous Pregnancies	Present Pregnancy	
1 (O.P.)	33	(1) 7 mths. Lived 2 days (2) F.T. „ 1½ „	A.-Z. — 16 weeks	Full-time Child alive and well
2 (X. A.)(210)	19	(1) 2 mths. Abortion (2) 5 „	A.-Z. — 8 weeks	Full-time Child alive and well
3 (2486)	25	(1) 3 „ (2) 3 „	Friedman — 12 weeks	Full-time Child alive and well
4 (A. N. C.) (192)	41	(1) 2 „ (2) 3 „	Friedman — 12 weeks	Progressing at 25 weeks
5 (307)	23	(1) F.T. Alive and well (2) 3 mths.	Friedman — 20 weeks	Progressing at 28 weeks
6 (6608)	24	(1) F.T. Alive and well (2) 4 mths. Twins (3) 8 „ S.B. Hydrocephalus Macerated	Friedman — 24 weeks	Progressing at 29 weeks
7 (11321)	26	(1) 8 „ Died 28 hrs. (2) 7 „ „ 8 hrs.	Friedman — 27 weeks	Progressing normally at 33 weeks Toxaemic symptoms developed at 27th week. Controlled ? by prolan

TABLE III.—*Habitual Abortion, etc. Pregnancy Test Positive or not Made*

Case No.	Age	Previous Pregnancies	Present Pregnancy	
1 (H. 434)	27	(1) 4 mths. (2) 3 „		Treatment from 6th week Full-time Child alive and well
2 (O. P.)	28	(1) 7 „ Lived 3 hrs. (2) „ „ 3 days	A.-Z. +	Treatment from 3rd month Full-time Child alive and well
3 (F. 803)	31	(1) 37 wks. Alive and well (2) 7 mths. Lived 1½ hrs. (3) 7 „ „ 1½ „ (4) 6 „ „ 6 days A.P.H.		Treatment from 3rd month 38 weeks Child died, 10 days
4 (O. P.)	24	(1) 1 mth. (2) 2 mths. (3) 3 „	A.-Z. +	Treatment from 6th week Full-time Child alive and well
5 (O. P.)	28	(1) 3 „ (2) 4 „ (3) 6½ „	A.-Z. +	Treatment from 6th week 5/12 abortion
6 (O. P.)	25	(1) 3 „ (2) 3 „	A.-Z. +	Treatment from 3rd month Full-time Child alive and well
7 (O. P.)	38	(1) F.T. Alive and well (2) F.T. „ S.B. „ (3) 8 mths. „ S.B. „ (4) 3 „ (5) F.T. „ S.B.		Treatment from 5th month Full-time Child alive and well

In lower animals it has for long been known that the re productive processes are sensitive to dietetic influence and that imperfect feeding may in a variety of ways dis turb the fertility of the animal by leading to sterility or t interference with the growth of the foetus in the uterus Vitamins A and E would seem to occupy a special place i the reproductive processes, in that gross deprivation o either, whilst consistent with apparently normal health o the mother animal, is attended by serious interference wit the intra-uterine development of the foetus. So far, n adequate attempts have been made to assess the possibl significance of the vitamin A factor in human preg nancy, but there is now a considerable body of evidence i respect of vitamin E. The work of Evans and his co laborators (Evans and Burr, 1927; Evans, 1932) on th specific relation between vitamin E deficiency and a form of "habitual abortion" in lower animals has inspired th use of this vitamin in human pathology. In rats (and th same facts have been shown to apply to some othe animals) gross deficiency in E, without disturbing th general health and vigour of the animal, and withou affecting oestrus and the faculty of fertilization, leads to a progressive disturbance in the nutrition of the foeta placenta and to maceration and resorption of the foetuse in the uterus. Vitamin E administered during the earlies stages of pregnancy is capable of anticipating and pre venting this foetal destruction, but, after the critical phas of placentation, replacement of vitamin E is valueless Congestive and haemorrhagic changes of a secondary nature occur in the maternal placenta of such affected gestations, and this is associated with vaginal bleeding Whilst analogies drawn from animal pathology are apt t be an insecure basis for argument, it cannot but be re garded as suggestive that, in the case of the *x* factor tha constitutes the background of the human problem and th E deficiency as it affects the animal, there are three strik ing points in common: first, the general health of th host remains apparently normal; secondly, repeated and often rapidly succeeding mating and impregnation is th rule; thirdly, the successive pregnancies are blighted. To these three admittedly striking analogies we have to add a fourth, the fact that in each case the exhibition of a preparation containing vitamin E (wheat-germ oil) at a sufficiently early stage breaks the sequence and, in a large proportion, enables the normal carrying of the pregnancy to full term. There is now considerable evidence in the literature (Vogt-Möller, 1931, 1933; Juhasz-Schäffer, 1933; Watson and Tew, 1936) as to the efficacy of wheat-germ oil in habitual abortion and stillbirth in women, and Shute (1937) has employed it with success in cases of accidental ante-partum bleeding.

The outstanding nature of the progress to which these discoveries witness can be best realized by those who re call the hopelessness with which the subject of habitual abortion and stillbirth was regarded in former days. Writ ing in the 1917 edition of his textbook, Whitridge Williams (1917) expressed the views then current when he said: ". . . nor will the most extended clinical study give a clue to the cause, and consequently the treatment of such patients is empirical and altogether unscientific." And again: ". . . the treatment of repeated abortion is in general so unsatisfactory as to constitute one of the opprobria of obstetrics."

It remains for the future to establish a correlation be tween two discoveries which have so strikingly and so unexpectedly converged towards the solution of one of our most baffling clinical problems. Meanwhile, the avail able data are consistent with the view that vitamin E possesses specific significance for the nutrition of the

TABLE IV.—*Habitual Abortion, etc., and Toxaemia and Ante-partum Haemorrhage*

Case No.	Age	Previous Pregnancies	Present Pregnancy				
			Pregnancy Test	Treatment commenced	Ante-partum Bleeding	Toxaemia	Result to Child
1 (A. 445)	37	(1) 7 mths. Induction for toxaemia (2) 7 „ Spontaneous. Toxaemia. Lived 2 days		5th month	Nil	37th week albuminuria B.P. 140/90	Induction 38th week Alive and well
2 (H. 427)	31	(1) 6 „ (2) 3 „	A.Z. +	3rd month	3rd month	39th week albuminuria, oedema	Full-time Alive and well
3 (O. P.)	31	(1) F.T. Alive and well (2) F.T. Died 4 days (3) 2 mths. (4) 3 „ (5) 2 „ (6) 3 „	A.Z. +	4th month	3rd and 4th months	Nil	Full-time Alive and well
4 (O. P.)	23	(1) 3 „ (2) 5 „ (3) 3 „		3rd month	8th month	Nil	Twins. Full-time. 1 alive and well. 1 died 10 days—convulsions
5 (R. M. H.)	40	(1) 3 „ (2) 3 „ (3) 5 „		3rd month	4th month	38th week albuminuria B.P. 145/90	Full-time Alive and well
6 (P. C.)	36	(1) 2 „ (2) 2 „ (3) 4 „ Hyperemesis (4) 7 „ Severe toxaemia, albuminuria, jaundice, coma (5) 3 „ (6) 5 „ Placenta praevia (7) 6 „		Early months	Nil	Nil	Full-time Alive and well
7 (9774)	23	(1) F.T. S.B. (2) F.T. Lived few hours (3) F.T. Lived 1 week	Friedman +	7th month	2nd to 8th month	Vomiting. Albuminuria B.P. 140/90	Full-time Alive and well
8 (11321)	26	(1) 8 mths. Died 28 hours (2) 7 „ Died 8 hours	Friedman −	7th month	Nil	27th week Headaches, visual disturbances	Progressing normally at 8th month Toxaemic symptoms subsided

placenta, and that, in some manner which is not clear, it operates through the activation of the luteinizing mechanism. The problem is complicated by several physiological uncertainties regarding the site of origin of prolan and progesterone in human pregnancy, which are not directly germane to the subject of this paper. It is generally believed that during the pregravid and the early gravid periods the anterior pituitary is responsible for the elaboration of the luteinizing hormone and the ovary for the production of progesterone, but that in the human subject this dual function is during the later stages of pregnancy performed by the placenta. We have no means of knowing which part or parts of the placenta are concerned in this reciprocal action. From the large output of the luteinizing substance in hydatid mole and chorion epithelioma we might by analogy be justified in ascribing the source of this hormone to the *foetal* elements of the placenta in ordinary pregnancy. From the excessive formation of luteal tissue which in these abnormal chorionic states may take place in the extrachorionic or maternal tissue of the ovary, we might by analogy ascribe the source of the luteal hormone to the *maternal* placenta in an ordinary pregnancy. If it could be established that the two hormones spring from different biological sources in the placenta it would be interesting to speculate whether vitamin E bears any special and differential relation in regard to the tissues concerned. In this connexion some recent observations on the effect of vitamin E deficiency on the gonadotropic functions of the anterior pituitary possess a special interest. It has been shown (Rowlands and Singer, 1936) that the pituitaries of rats fed on an E-free diet are markedly defective in the luteinizing or ovulation-producing hormone as tested on oestrous rabbits. At the same time neither anterior pituitary nor luteinizing pregnancy urine extracts are capable of preventing the resorption of the foetuses in an E-free rat (Diakov and Krizenecky, 1933; Geller, 1933; Rowlands and Singer, 1936).

Toxaemia and the X Factor

While there is still some uncertainty in regard to the interpretation of the scientific data, there would seem to be no room for doubting that these recent discoveries have brought us within measurable distance of a solution of the habitual abortion–stillbirth complex in women. The fact that we can eradicate the underlying taint in a percentage which in different records varies between 75 and nearly 90, and that the earlier the treatment is instituted the higher the success, helps to establish this claim on a secure basis. In view of the significant part which we have shown a habitual abortion–stillbirth sequence to play in the toxaemic phenomena, it might be assumed that the further step—namely, the merging of these phenomena within the same deficiency ambit—should be easy. We, indeed, began our investigations on this aspect of the question in the hope that the possession of the therapeutic key to the abortion sequence would automatically enable us to unlock the major secret. In this we have been disappointed. At the same time, certain data which have emerged during these investigations have seemed to us worthy of being placed upon record, especially as they relate to observations that can only be adequately tested on a larger scale than is generally possible in a single clinic. These observations can conveniently be discussed under four headings.

1. Influence of Prolan and Progesterone on Confirmed Cases of Toxaemia

Over a period of about five years (since the discovery of the efficacy of prolan and progesterone in abortion) we have, at different times and as the clinical potency of the commercial preparations improved, exhibited urinary prolan or progestin preparations, as also vitamin E concentrates, to a considerable number of cases of established toxaemia. The results of these experimental trials have been almost uniformly negative. Except that in a few

instances of previously persisting hypertension we have noted a maintained lowering of the blood pressure, and that in several cases severe headache and visual disturbance exhibiting the usual toxic character disappeared at once after the administration of urinary prolan, we have been unable to arrest or control confirmed and aggravated cases. In the majority of instances there has been no effect on the hypertension and in none has the degree of albuminuria been appreciably lessened.

It is of course conceivable that, as in the habitual abortion of women and the blighted pregnancies of the lower animal, failure may be attributable to the fact that, unless commenced before the critical stage in placentation, the damage may be irrecoverable. This view would necessarily imply that where toxaemia occurs in the later months the causal factor from which it springs has in general operated during the early months, and that an interval clinically non-toxaemic separates the two events. The observations of Henry (1936) may, however, possess some relevance in this connexion. From a retrospective study of a large group of toxaemic patients this worker claims that in a high proportion evidence of the toxaemic process in the shape of a steadily mounting blood pressure may be discovered from as early as the fourth month. While they do not necessarily conflict with this view there is especial interest attached to the claims made by Shute (1937) that cases of premature separation of the placenta, even in the later months, can be successfully treated with vitamin E. This observation has an added interest on account of the close clinical relation known to exist between this condition and the toxaemic phenomena.

A factor which has militated seriously against the institution of an adequate testing of the preventive possibilities of the new therapy has been the paucity of material which our present management of toxaemia necessarily implies. It is obvious that the most suitable clinical material for such a purpose is the woman in whom, as we have shown in previous communications, the recurrence of toxaemia in two or more successive pregnancies enables us to infer an almost 100 per cent. risk in any succeeding gestation. But this has been just the class of case in which, with our existing knowledge, we have in general felt constrained to urge limitation by means of sterilization or, failing that, by contraception. This has left for experimental purposes a small group which are set out in Table IV, where, despite previous toxaemic stillbirths or a recurring series of alternating non-toxaemic and toxaemic pregnancies, the patient has insisted upon making a further attempt, during which the opportunity for the institution of early therapy has becoming possible. The results are suggestive, especially when we have regard to such apparently hopeless clinical prospects as are represented by Cases 1, 6, 7, and 8 (Table IV). Cases 1 to 8 further raise the question as to how far early commencement of the therapy may have succeeded in preventing or in controlling the toxaemic manifestations destined to develop in the later months and, in this way, to enable the gestation to be carried in safety to the birth of a living child.

2. Unmasking of Toxaemic Taint in a Pregnancy Successfully Carried to the Later Months

We have shown (Table I) that women with a history of repeated abortion seem to be exposed to a special risk of toxaemia in a pregnancy which extends into the later months. Similarly, in a case under treatment because of a history of repeated abortion, the successful carrying of the pregnancy to the last trimester by means of the substitution therapy may unmask the foxaemic taint (Cases 2, 5, 7, and 8, Table IV). This may imply that the factor making for toxaemia is identical with that responsible for abortion, and that, whilst the latter has been prevented, there has been left behind damage sufficient to initiate a toxaemia at a later date. It is clear that considerable evidence on this subject is required before we can speak with certainty. In the present state of our knowledge it is impossible to deny either that the previous abortions and the toxaemia may arise from one and the same source —a source other than that under consideration—or, alternatively, that the toxaemia has an entirely independent origin appearing merely because the pregnancy has been steered into the later and more vulnerable stage. That this unmasking phenomenon is by no means infrequent is demonstrated by the fact that we have recently obtained records from obstetrical colleagues of four further cases.

TABLE *V.—Toxaemia and Negative Friedman Test*

Case No.	Age	Previous Pregnancies	Present Pregnancy		
			Pregnancy Test	Toxaemia	Result to Child
1 (11357)	22	Nil	Friedman— 35 weeks	B.P. 170/105	Induction at 35 weeks Alive and well
2 (11425)	34	Nil	Friedman— 17 weeks	B.P. 158/98 Severe headaches	Progressing at 20 weeks
3 (11321)	26	(1) 8 mths. Died 28 hrs. (2) 7 mths. Died 8 hrs.	Friedman— 27 weeks	Headaches. Visual disturbance	Progressing at 33rd week Toxaemic symptoms subsided

3. The Gonadotropic Pregnancy Test in Toxaemic Cases

In two recent cases of toxaemia (Table V, Case 1, thirty-five weeks' pregnancy; and Case 2, seventeen weeks' pregnancy) the Friedman test, carried out to determine the question of foetal survival, was negative although subsequently the foetus was found to be alive. In Case 3 (Table V), that of a woman with a history of two previous premature children that died shortly after birth, the Friedman test was negative at the twenty-seventh week of the third pregnancy in association with mild toxaemic symptoms. On the other hand, in one woman (Case 7, Table IV) who had a previous history of three dead children born at full term, and who during her fourth pregnancy had long-continued ante-partum bleeding with some mild toxaemic symptoms, the Friedman test was positive at the twenty-eighth week. In a further case (Case 2, Table IV), with a previous history of two abortions, the Aschheim-Zondek test was positive at the third month, while toxaemia developed at the thirty-ninth week. No test was made at this later date. The negative findings in the three first cases quoted possess a special interest in view of the observations of Smith and Smith (1935), who claim that late pregnancy toxaemia is associated with an increased output of gonadotropic hormone.

4. Breaking of the Chain

Where there has been an unbroken habitual abortion-stillbirth sequence in which toxaemia features, *the breaking of the chain of disaster* under treatment and the birth of a live child is one of the most suggestive findings (Cases 1 and 6, Table IV).

The fuller records of some of the cases epitomized in the tables are instructive:

Case 1 (Table IV), aged 37, had suffered from severe and progressive toxaemia during the two preceding pregnancies,

the first ending in a stillbirth after artificial induction at the seventh month, the second ending spontaneously at the seventh month in the birth of a child which lived two days. She had been warned against further pregnancies. Disregarding this, she was first seen by me at the fifth month of her third pregnancy, when her health was good. The Aschheim-Zondek test was positive. She was placed on prolan therapy and carried to the thirty-seventh week, when the blood pressure began to rise (140/90) and a trace of albumin appeared in the urine. Induction at the thirty-eighth week resulted in the birth of a healthy child, which survived.

Case 5 (Table IV), aged 40, had a history of sound health apart from three previous abortions between the third and fifth months. She suffered from hyperemesis during the third month of her fourth pregnancy, for which hospital treatment was required. At the fourth month there was some vaginal bleeding. Under prolan treatment the pregnancy progressed satisfactorily till the thirty-eighth week, when albuminuria (0.05 per cent.) appeared with moderate hypertension (145/90). She was delivered at full term of a strong infant.

Case 6 (Table IV), aged 36, had had six obstetric disasters before being seen by the writer. Two abortions each at the second month were followed by a third pregnancy, in which there was very severe toxic hyperemesis, ending in a four-months abortion. The fourth pregnancy ended at the seventh month in a stillbirth after very grave toxaemic manifestations associated with coma. The fifth pregnancy ended in a three-months abortion, and the sixth with placenta praevia at the fifth month. Between the fifth and sixth pregnancies she was examined by a London obstetrician, who found her in the enjoyment of sound health. The writer first saw her after the sixth disaster when, apart from some septic teeth and mildly inflamed tonsils, which were removed, she was found to be healthy. A full investigation revealed no evidence of renal disorder. Though I made careful observation during a seventh pregnancy the membranes ruptured spontaneously at the sixth month, and four days later a macerated infant was delivered. There was no evidence of toxaemia. Despite this disastrous record the patient persisted, and under prolan therapy gave birth to a live child at full term after an uneventful eighth gestation. The statement regarding this last pregnancy we have received from the medical attendant of the patient.

Case 7 (Table IV), aged 23, had had three previous deliveries, all at full term. The first child was stillborn, the second lived a few hours, and the third one week. No cause was given for the death of the infants. She was first seen at the ante-natal clinic at the twenty-seventh week of her fourth pregnancy with a history of what she described as a more or less regular monthly loss of blood from the vagina lasting for two days on each occasion and continuing from the second to the eighth month. There was occasional abdominal pain and nausea, and vomiting had been present daily throughout. The Friedman test was positive. She was placed upon prolan therapy and, apart from a transient albuminuria and a slight rise of blood pressure (diastolic 90 mm. Hg), she went to term and was delivered of a child which was strong and throve well.

Diet and Fertility

The gradual emergence of the specific significance of dietetic factors in relation to fertility necessarily raises questions the importance of which extends beyond the range of the problems that beset the clinician. For it is obvious that, in so far as deficiency in these elements becomes increasingly identified with the factors responsible for abortion, it assumes a place of first-rate importance in the national economy. At the present moment it is impossible to state with any certainty the incidence of abortion which falls into this category. We may, however, safely assume that it constitutes a considerable proportion of "spontaneous" cases, and that it therefore must receive special attention in any future study of the factors which influence the national birth rate. The reorientation of our outlook on the bearing of diet on racial fertility which the recent discoveries necessarily imply must awaken a new interest in the study of these problems and, more especially, as to the degree in which changes in the diet of the country have contributed to the steady decline in the birth rate during the past seventy years.

Summary

The evidence which has become available within recent years is consistent with the view that an important cause of the habitual abortion–stillbirth syndrome, which has baffled the clinician in the past, is a disturbance in the metabolism of pregnancy, in which a deficiency of vitamin E is involved. The evidence further raises the question as to the part which vitamin E plays in the prolan–progesterone mechanism of pregnancy.

The clinical applications of the results of recent research are simple and impressive.

In this communication some evidence is adduced for the view that the above considerations may likewise supply us with the missing *x* factor which we have previously postulated to explain the non-toxaemic recurrence of abortion, stillbirth, and accidental haemorrhage in women who are subject to eclampsia and pre-eclampsia. This evidence is consistent with the view that major degrees of deficiency tend to interruption of pregnancy in the early months without toxaemic manifestations, whereas if the deficiency is less marked the pregnancy is capable of progressing to the later months with a consequent risk of toxaemia.

The evidence reviewed in this communication raises the question as to the part played by diet in racial fertility and more especially as to how far changes in the consumption of essential dietetic elements may have contributed to the declining birth rate.

REFERENCES

Diakov, F. A., and Krizenecky, J. (1933). *Proc. Soc. exp. Biol. N.Y.*, **31**, 58.
Evans, H. M. (1932). *J. Amer. med. Ass.*, **99**, 469.
—— and Burr, G. O. (1927). *Mem. Univ. California*, **8**, 116.
Geller, F. C. (1933). *Arch Gynäk.*, **156**, 345.
Henry, J. S. (1936). *J. Obstet. Gynaec. Brit. Emp.*, **43**, 908.
Johnstone, R. W., Wiesner, B. P., and Marshall, P. G. (1932). *Lancet*, **3**, 509.
Juhasz-Schäffer, A. (1933). *Ergeb. inn. Med. Kinderheilk.*, **45**, 129.
Kane, H. F. (1936). *Amer. J. Obstet. Gynec.*, **32**, 110.
Krohn, L., Falls, F. H., and Lackner, J. E. (1935). Ibid., **29**, 198.
Rowlands, I. W., and Singer, E. (1936). *J. Physiol.*, **86**, 323.
Shute, E. (1937). *J. Obstet. Gynaec. Brit. Emp.*, **44**, 121.
Smith, G. van S., and Smith, A. W. (1935). *Surg. Gynec. Obstet.*, **61**, 27.
Vogt-Möller, P. (1931). *Lancet*, **2**, 182.
—— (1933). *Acta obstet. gynec. scand.*, **13**, 219.
Watson, E. M., and Tew, W. P. (1936). *Amer. J. Obstet. Gynec.*, **31**, 352.
Wiesner, B. P. (1931). *British Medical Journal*, **1**, 860.
Williams, J. W. (1917). *Obstetrics*, pp. 664, 672, New York and London.
Young, J. (1914). *J. Obstet. Gynaec. Brit. Emp.*, **26**, 1.
—— and Miller, D. A. (1921). *British Medical Journal*, **1**, 486; (1921) *Proc. roy. Soc. Med.*, Obst. Sect., **14**, 247.
—— (1927). *J. Obstet. Gynaec. Brit. Emp.*, **34**, 279.
—— (1929). *British Medical Journal*, **1**, 91.
—— (1932). *J. Obstet. Gynaec. Brit. Emp.*, **39**, 310.
—— Sym, J. C. B., and Crowe, E. V. (1932). *Proc. roy. Soc. Med.*, **25**, 1235.

The International Union of Local Authorities will hold a conference in Paris from July 5 to 11 under the patronage of the French Government. The two main questions for discussion are: (1) pollution of the air by smoke, gases, and dust; and (2) the supply of milk and the regulations necessary for public health. Dr. Thomas Orr, M.O.H. for Ealing, is the British reporter on the question of milk, and Dr. J. Johnstone Jervis, M.O.H. for Leeds, on atmospheric pollution. The sessions on these subjects will be held at the "Maison de la Chimie," 28, Rue St. Dominique. The secretary for Great Britain is Mr. T. A. Avis, 26, Abingdon Street, Westminster, S.W.1.

THE TREATMENT OF MID-LINE VENTRAL HERNIA

BY

R. WOOD POWER, F.R.C.S.I.

Senior Surgeon, Herefordshire General Hospital

A new surgical operation or modification has often the unhappy knack of leaving complications or ill effects in its trail, often so marked as to render null and void what at first promised to be a surgical success. It is a curious fact that since Lister's time, when abdominal operations first became prevalent, incisional hernias should have been and still remain such an unfortunate complication. No surgeon, of whatever standing, can claim exception to this misfortune; for as long as surgeons operate so long will it occur. It has been truly said that the sole method of avoiding incisional hernias is to avoid operating.

A small ventral hernia does not present any great difficulty in its repair. It is the large umbilical and incisional hernias which present difficulties to the surgeon, and I wish to direct attention to these and to report the results of my operation in these cases.

There are three layers of the abdominal wall which have to be taken into account in the repair of a ventral hernia: the fascia transversalis, the muscular layer, and the rectus fascia, all of which must be replaced in their natural position. Of these three the muscle is by far the most important, and, strange to say, it is this layer which has been neglected in almost all types of operative repair. To guarantee a successful operation it is of paramount importance not only to mobilize the recti muscles the whole length of the hernial opening, but to see that they are approximated in the mid-line. Failure to achieve this will result in the rectus fascia having to shoulder the entire resulting strain. Fascia, however dense, will stretch in time, and a recurrence will invariably follow.

Another consideration of great importance is that of tension. If at the completion of the operation any layer is under undue tension failure is almost certain to ensue. Tension causes strangulation of the tissues that results in sloughing and eventually the formation of scar tissue, which is a useless barrier to protrusion of the bowel. To quote Dickson (1935) on this subject: "It is much more important to direct effort to relieving wound tension than it is to devise some new type of suture material. A wound which is completely relaxed and without tension will have a good blood supply, and no matter what suture material is used, whether absorbable or non-absorbable or, it might be said, whether any at all is used, the wound will heal."

Scar tissue is a third factor which must be taken into consideration in the repair of a ventral hernia. It results from previous sepsis or interference with the blood supply at the neck of the sac. Such tissue is poorly supplied with blood, stretches easily, and forms a very inadequate medium for repair. If the operation is to be successful it is essential to excise all scar tissue and unite healthy normal tissue on both sides.

From the foregoing, three aphorisms arise that are essential for sound operative technique in the repair of a ventral hernia:

1. Like tissue must be replaced by like tissue.

2. There must be no undue tension on the wound at the completion of the operation.

3. All scar tissue must be excised.

Considerations of Operation

When confronted with a large umbilical or incisional hernia there are many points which have to be considered before embarking on an operation—the age of the patient, the condition of the heart and lungs, the blood pressure, the condition of the kidneys, the amount of obesity, and the general condition as a whole. Again, are we dealing with a simple hernia, or is there an obstruction or strangulation of the bowel beneath? Operations of this calibre in the aged (the type of case usually met with) are serious undertakings, for if the operation is carried out thoroughly it is a long and shock-producing procedure. With so many factors to be taken into account it is obvious that no single type of operation can be suitable for all cases. When conditions are favourable and the patient not too old no operation can compare with the Gallie (1923) graft. I think this has been one of the great discoveries of the past decade, and must have brought relief to countless sufferers. When carried out thoroughly the results are brilliant, and operations which before the advent of the Gallie graft were impracticable have now become commonplace.

But what of the patient whom we consider too great a risk for an operation of this length? What of the case with an underlying obstruction which we want to finish as quickly as possible? And again, what of the case to be operated upon for some other abdominal condition in which there can be no justification for spending a long time over the repair? If these patients can be cured of their hernias without endangering their lives it is obviously our duty to do so.

For some years I have been practising an operation that I have found eminently suitable for the "risky case" and for those cases complicated by obstruction or strangulation, or in combination with other abdominal operations. It fulfils my three aphorisms, does not add a great deal of time to the operation, and, above all, the results have been most satisfactory and so far the hernia has not recurred.

Pre-operative Precautions

It is advisable to have these patients flat in bed for some days before operation provided there is no acute complication. This allows the bowel to settle in the abdomen and to get accustomed to its new position.

A second point we must guard against is increased post-operative intra-abdominal pressure, which is a real danger to life following these operations. Pressure on the diaphragm interferes with respiration and predisposes to hypostatic pneumonia. It also produces cardiac symptoms from pressure on the heart and abdominal vessels. Acute dilatation of the stomach and ileus are fairly frequent complications. Ileus is a mysterious and grave complication of this operation. It is akin to the ileus associated with a tight spica plaster with which all orthopaedic surgeons are well acquainted. It is almost exclusively confined to hernias in the upper abdomen, and occurs whether the peritoneum has been opened or not. I have had two recent cases of ileus following the Gallie operation, and strangely enough the peritoneum was not opened at either operation. One of the patients unfortunately succumbed, while the second recovered after several anxious days. This type of ileus is undoubtedly associated with increased intra-abdominal pressure caused by sudden compression of the upper abdomen, for when it appears in conjunction with a spica plaster the mere act of splitting up the plaster will relieve the ileus. How increased intra-abdominal pressure actually brings about an ileus I do not know, nor

have I ever had a satisfactory explanation of it, but that it is a grave complication there is no denying.

As a precaution against post-operative ileus it is advisable to strap the upper abdomen for some days prior to operation. The strapping should be gradually tightened each day until the abdomen is firmly compressed. I believe that this gradually increasing pressure is a safeguard against post-operative ileus.

The Anaesthetic

Either local or spinal anaesthesia alone should be used in patients over 40 years of age. The older the patient the safer the operation becomes if local anaesthesia is used. A wide field of infiltration is often required, but this should not be a deterrent to its use. Spinal anaesthesia is very fine to work with, but it has many contraindications in the aged.

The Operation

For subumbilical hernias the modified Trendelenburg position is a definite aid in stout subjects, while the reverse position is true for upper abdominal work. The skin incision should extend well beyond the hernia at both ends of the wound, and any previous scar should be excised. In the case of umbilical hernias where the umbilicus has been obliterated or distorted a new umbilicus should be provided for when making the skin incision, as practised by Bonney (1935). The sac, when reached, is freed from the subcutaneous tissues; the rectus sheath is then opened in a vertical direction, and this incision should extend into the normal area of the abdominal wall at each end of the wound. The sac can now be completely freed. Unless the sac is large, as in an umbilical hernia, it is quite unnecessary to open or remove it; if the sac is left an enormous amount of time can be saved. When such a sac is opened the bowel or omentum is often found adhering to it. If any attempt is made to free such adhesions large areas may be left that require reperitonizing, which is time-absorbing and shock-producing to the patient. If it is possible the sac should be inverted and the fascia transversalis sutured.

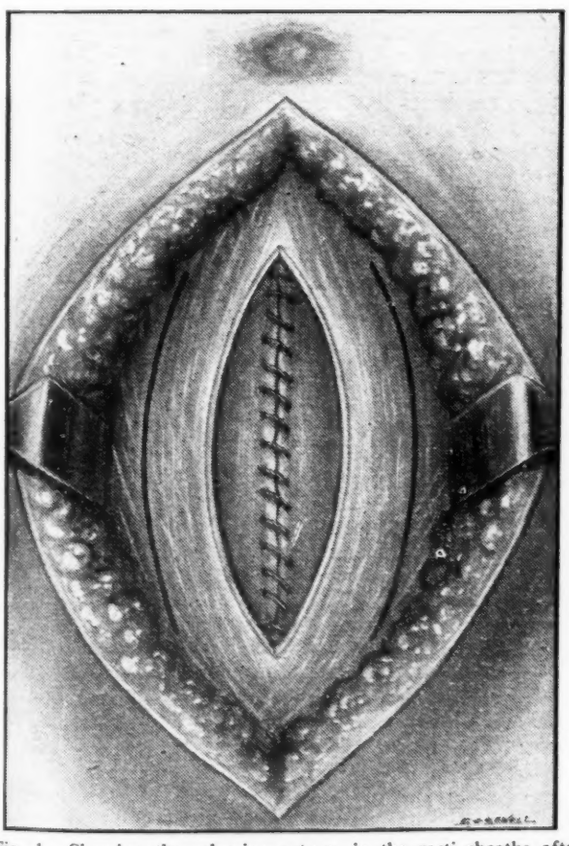


Fig. 1.—Showing the releasing sutures in the recti sheaths after the peritoneum has been closed and all scar tissue removed.

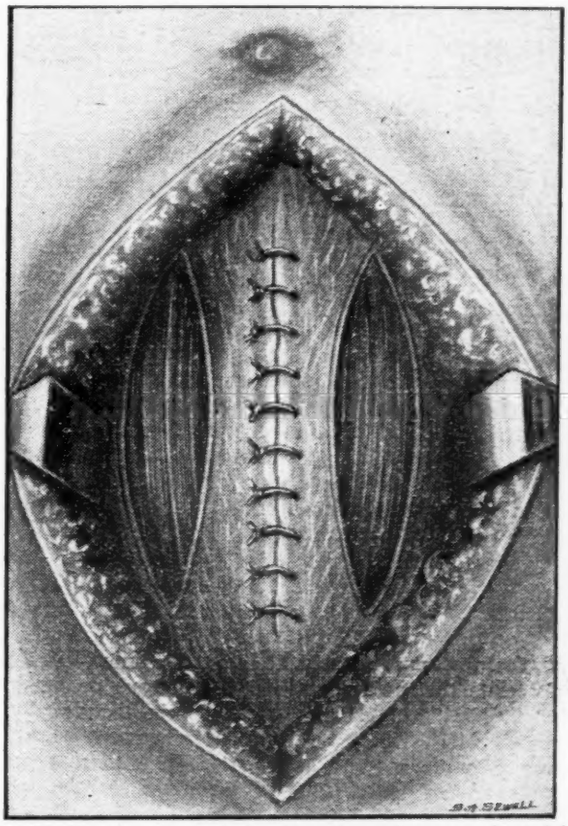


Fig. 2.—Showing the recti sheaths and muscles approximated by interrupted catgut sutures; each suture passes through the muscle and fascia.

The next step is the excision of all scar tissue associated with the rectus fascia. This must be all very carefully removed as far laterally as the rectus muscle on either side, so that when the fascia is sutured normal healthy tissue is left. It is of paramount importance that this part of the operation should be carried out with great care at each extremity of the wound, for these are the danger-points and the most likely sites for recurrences to take place. The recti muscles are now freed from the peritoneum, special care again being taken to mobilize the muscles thoroughly at either end of the wound. The subcutaneous tissue is next dissected back to the lateral border of the recti muscles and a vertical incision is made in the rectus fascia near the lateral border of the muscle, as shown in Fig. 1. The wound is now ready for suture. It should be noted that the anterior sheath of the recti muscles is not disturbed; this is important in aiding the approximation of these muscles.

Interrupted No. 5 catgut sutures are inserted, each suture passing through the recti muscles and fascia on either side, as shown in Fig. 2. Figs. 3 and 4 show a cross-section of the wound before and after the insertion of these sutures. The wound is then closed with drainage, which should not be omitted.

Fig. 3.—Showing a cross-section of Fig. 1.

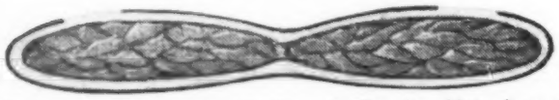


Fig. 4.—Showing a cross-section of Fig. 2. Note how the muscles return to their normal dimensions when approximated in the mid-line.

Commentary

Several points of interest arise in connexion with this operation. First, what is the effect of the aperture left in the rectus sheath? Does it cause any weakness of the abdominal wall, and will a hernia occur at this site? Does it remain devoid of fascial covering, or does the fascia regenerate? So far as I can ascertain from examination of these cases some time after operation there is no weakness of the abdominal wall at the site of the incisions in the recti sheaths. This bears out what has always been my contention—that it is the rectus muscle which is the important constituent of the abdominal wall in the prevention of hernia. Fascia has for ages past proved quite inadequate in preventing the protrusion of the bowel unless the muscles are approximated at the same time. Failure to appreciate this point has led to disastrous results in the past. The main function of fascia in the body would appear to be to facilitate the free and smooth working of muscle, to prevent any undue mobility, and to protect it against any undue pressure. It is strongest where pressure is likely to be greatest, as in the palm of the hand and sole of the foot, and weakest where muscle play is greatest, as over the biceps and calf muscles. That the absence of fascia is no great handicap is shown in the thigh when strips of fascia lata are removed for the Gallie operation. In a similar way the absence of fascia over a portion of the recti muscles leads to no ill effect. I am certain that it will never lead to a hernia at this site, and my results so far have borne this out.

It is difficult to dogmatize about the gap in the rectus fascia, but in all probability it is filled by scar tissue. Nature generally attempts repair by this method.

A second question that arises is what are the merits of this operation as compared with the Gallie graft, and should it take the place of this operation?

I do not think this question can be answered on such a small series of cases as I can present, for I have performed this operation only on cases which I have not considered suitable for the Gallie graft. The Gallie operation is so brilliant that one hesitates to suggest any other operation to displace it. In future I intend to apply my operation in all cases of ventral hernia. I do not say this to belittle the Gallie operation in any way, but merely to explore the results over a larger series of cases. I feel convinced that there is a definite place for such an operation as I have described, particularly in the aged, when acute conditions are present, and also in connexion with other abdominal operations.

A third consideration of importance is that of increased post-operative intra-abdominal pressure, which may be a grave complication of the Gallie operation in upper abdominal hernias. As already stated, I have had two such cases recently, one of which ended fatally. In the operation I have described there is no tension on the wound at the completion of the operation, so this complication is eliminated.

Finally, my operation is based on the fact that muscle, if properly mobilized, will stretch to any extent when supported by fascia, and that fascia itself has practically no elasticity. When the muscles are freely mobilized there is rarely any difficulty in approximating them in the mid-line, and the additional support of the fascia will prevent the possibility of the sutures cutting through the stretched muscles after the operation. That the fascia will not stretch to the mid-line without undue tension is obvious, but when the rectus fascia is incised as I have described tension is non-existent.

Results

I can report but thirteen cases of this operation. All the patients are alive and free from recurrence. These cases extend over a period of six years, so that the majority have had several years' freedom from their hernias and may, I think, be looked upon as cured.

REFERENCES

Berkeley, Sir C., and Bonney, V. (1935). *Textbook of Gynaecological Surgery*. London.

Dickson, A. R. (1935). *Surg. Gynec. Obstet.*, **61**, 836.

Gallie, W. E., and Le Mesurier, A. B. (1923). *Can. med. Assoc. J.*, **13**, 469.

HEREDITARY SEBACEOUS CYSTS

BY

J. T. INGRAM, M.D., F.R.C.P.

Honorary Physician in Charge of the Dermatological Department, the General Infirmary at Leeds

AND

MICHAEL C. OLDFIELD, F.R.C.S.

Senior Surgical Tutor, the General Infirmary at Leeds

(WITH SPECIAL PLATE)

Sebaceous cysts are common, yet it is remarkable that little is known of their exact mode of origin. It is known that these cysts on occasion may be inherited. Paget (1870) . ' that "perhaps in the majority of cases the bearers of these have known one or more members of their family similarly endowed." We describe below a family in which multiple sebaceous cysts occur in five members of three generations. We know of only five similar families reported in the literature.

Paget (1870a) refers to a case observed by Mr. James Reid. The patient was a woman aged 80 years, who had numerous sebaceous cysts on the scalp. Three of her daughters showed similar cysts. Two and a half years before the death of the patient one cyst became inflamed; it was opened, and a discharge of sebaceous matter followed. A tumour developed at the site, and grew to a mass nearly five inches in diameter before she died. Klausner (1917) described two families showing inherited multiple sebaceous cysts. In one family two brothers aged 18 and 24 years, and one of their three sisters aged 15 years, were affected; the cysts had existed from "earliest youth." In the second family cysts occurred in three generations. Two brothers, aged 32 and 31 years, had cysts from childhood. Their mother and grandmother had similar lesions in the skin. Prakken (1933) described a case of multiple sebaceous cysts in a man aged 48 years. The cysts had been present from the age of 12. His sister and his father were similarly affected. Parkes Weber and Schlüter (1936), at the Royal Society of Medicine recently, showed two brothers aged 50 and 59½ years who suffered from multiple sebaceous cysts. The swellings were first noticed

soon after the age of 20 years, and one or two of the cysts were partially calcified. Each brother had a conspicuous nodule on the dorsal aspect of one ring-finger as well as numerous cysts on the trunk and forehead. Their father was said to have had a similar ring-finger nodule, and one of the elder brother's daughters had a few cysts of the same kind.

Non-familial cases of multiple sebaceous cysts are more common. Rayer (1835) described cases in which multiple follicular tumours occurred. These tumours, he said, may be called wens, steatomata, or atheromata. He quoted cases of multiple cyst formation described by Dagorn (Paris, 1822) and Ludwig (1793). Rayer admitted that the aetiology was obscure, but declared that cysts "occasionally appear due to an hereditary disposition." Jamieson (1873) reported a case of a man aged 40 years in whom there were 250 sebaceous cysts, which were distributed all over the body with the exception of the hands. When examined with a lens no "black point" was discovered in the skin over them. He considered that the cysts arose by obstruction of part or the whole of the sebaceous follicle. Maclaren (1886) showed a case of multiple sebaceous cysts at the Edinburgh Medico-Chirurgical Society in 1886. The patient was a man aged 19 years, who presented 132 cysts, which were scattered all over the body with the exception of the palms of the hands and the soles of the feet. Radcliffe Crocker (1888) described a similar condition as "multiple atheromatous cysts." He believed that the cysts were caused by accumulation of epidermis and sebaceous matter in the follicle with hypertrophy of the wall. Chiari (1890), after a necropsy upon a man aged 74 years who had died of tuberculosis, undertook extensive histological studies of atheromatous cysts which were disseminated over the whole surface of the body with the exception of the palms of the hands and the soles of the feet. Chiari described two types of cyst. Both were retention cysts due to accumulation of horny masses—in the first instance, in the neck of the follicle, and, in the second, in the duct of the sebaceous gland. After reviewing the literature, he discussed three possible modes of origin:

(i) Cystic dilatation of the sebaceous gland and the hair follicle by retained secretion.

(ii) Complete new growth of the cysts in the connective tissue.

(iii) Separation of parts of the ectoderm during embryonic life.

He favoured the first theory of origin for sebaceous and follicular cysts, but stressed the anatomical and histological difference between these cysts and dermoid cysts, which arise as embryonic inclusion cysts.

Bossellini (1898) described a case of multiple sebaceous cysts occurring on the trunk of a man aged 40 years. Pringle (1899) described a similar case in a man aged 21 years, calling the condition "steatocystoma multiplex," and Günther (1917) recorded one in a man of 22, terming the condition "sebocystomatosis." Orr (1923) showed a male patient aged 32 years at the Royal Society of Medicine from whom 150 sebaceous cysts had been removed, and many hundreds of others remained on the chest and abdominal wall. Arzt (1926, 1930) gave an account of two cases in males and one in a female. In the latter the cysts were localized to the intermammary region. At Rostock, in 1929, another case was reported and the aetiology of the condition reviewed. Oscar Gans (1928) described the histological features of the cysts in sebocystomatosis.

On December 13, 1935, one of us (J. T. I.) presented, as familial sebocystomatosis, a family of father, daughter, and two sons, at a meeting of the Leeds and West Riding Medico-Chirurgical Society. An account of these cases is given below.

Case I

Dorothy T., aged 21 years, was admitted to the General Infirmary at Leeds under our care on December 5, 1935. She complained of disfigurement due to numerous swellings on her face and body. The lumps had been noticed first when she was 10 years old, and they had steadily increased in size. Those on her right leg had become inflamed and painful. They burst, discharging "obnoxious cheesy material for some weeks." She had never suffered from acne. She said that two of her brothers, her father, and her paternal grandmother had similar swellings.

On examination the patient apparently was a healthy young woman. Numerous swellings, however, were visible all over her body. They were roughly circular or oval in shape, a quarter of an inch to two inches in diameter. Some were yellow in colour; most, however, were covered by normal pink skin. They were fluctuant but not translucent. Some were tense, but most were soft and of the consistency of putty. They were closely attached to the skin but free from the deep tissues. No comedones were seen. There were two swellings in the region of the right eyebrow, three near the left eyebrow, two below the right eyelid, and four below the left eyelid. There were three large cysts on the forehead, to hide which she had grown a fringe. There were two on the back of the neck, two on the back of the chest, five in the buttock region, three on the thighs, six on the legs, and six on each forearm. There were no cysts on the palms of the hands or the soles of the feet. There were three irregular scars on the front of the right leg, marking the site of the previously "inflamed cysts."

Treatment.—On December 9, 1935, twenty of the most disfiguring cysts were removed under ether anaesthesia. The wounds were closed with fine eyeless needles and plastic sutures. The patient was discharged on December 18, when the wounds had healed. Nine months later she returned and asked to have two more cysts removed. On September 15, 1936, one was removed from the centre of the forehead and one from the left leg, under local anaesthesia.

Case II

Walter T., Dorothy's brother, aged 11, was re-examined in the out-patient department of the General Infirmary at Leeds on September 15, 1936. From the age of 6 years his mother had noticed swellings on his face, scalp, back, and the front of his chest. A cyst on the front of his sternum had been removed in 1931, and the scar was still visible.

A cyst one inch in diameter was removed from the region of the right eyebrow under local anaesthesia. There were three cysts of about the same size on the hairy part of the scalp, but as these were hidden by the hair the patient and his mother did not choose to have them removed.

Pathological Report.—A number of the cysts were submitted for pathological examination, and we are indebted to Dr. Côté, working in the pathological department of the University of Leeds, for the microscopical report, which was as follows:

"The appearance in each case is almost identical. The cysts are lined by a continuous epidermic lining, consisting of rete Malpighii, stratum granulosum, and stratum corneum, and are filled with varying amounts of keratinous matter and amorphous granular debris. None of the cysts shows calcification. Each is surrounded by a thick avascular connective tissue condensation capsule. None of the sections includes skin or dermal appendages. The subcutaneous tissues surrounding the lesions appear normal except in the case of the cyst from the eyelid, where there are many cholesterol clefts with numerous foreign body giant cells in relation to them."

The results of examination of the other members of the family are given below.

Case III.—George T., Dorothy's married brother, aged 24, had sixty-one cysts scattered all over his body. The fourteen cysts on his face and forehead were most disfiguring. There were many large cysts on his scalp, trunk, and limbs. His only child, aged 18 months, was examined, but showed no cysts.

Case IV.—William T., Dorothy's father, aged 53, had five cysts on his forehead and three large cysts on his scalp from the time when he was "quite young." Three cysts had been removed from his forehead soon after he was married. His only sister had been free from cysts.

Case V.—John T., Dorothy's brother, aged 26, was not affected, but had suffered from severe acne on his face when he was about 20 years old.

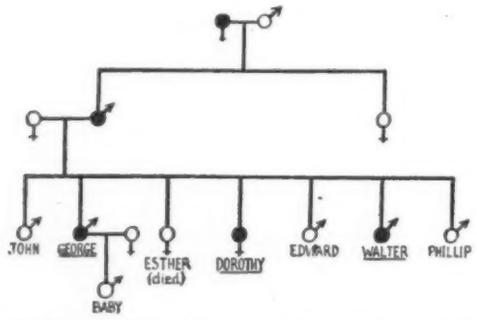
Case VI.—Edward T, aged 19, had no cysts, but suffered from acne on his face.

Case VII.—Phillip T., aged 9, had no cysts.

Case VIII.—Esther T., who died when she was 18 years old from "valvular disease of the heart," had been free from cysts.

Mrs. T., Dorothy's mother, was apparently free from cysts, but Dorothy's paternal grandmother was said to have had numerous swellings on her body, face, and chest.

FAMILY TREE SHOWING AFFECTED MEMBERS OF FAMILY



The black signs indicate those bearing multiple sebaceous cysts ; O, free from cysts.

It is interesting to note that alternate children in the third generation suffered from multiple sebaceous cysts. Cockayne (1933) believes that multiple sebaceous cysts may be inherited as a Mendelian dominant.

From the family table above, the factor for multiple sebaceous cysts appears to be inherited in a Mendelian fashion, and resembles a dominant more than a recessive.

Commentary

Aetiology.—Sebocystomatosis seems to arise most commonly in young adults. In many the cysts appeared at about 6 years of age. No case of congenital sebaceous cyst has been reported, although Cockayne says "they are first noticed in childhood and are probably congenital." According to Choyce (1932), "cysts described as congenital sebaceous cysts are always dermoids." Men are more commonly affected than women. The Rostock view that the condition is confined to the male sex is certainly erroneous, female cases having been reported previously by Arzt (1930), Orr, Klausner, Prakken, and others. Hereditary multiple sebaceous cysts are rare. In the family described above two of the unaffected members suffered from acne, but in no recorded case has attention been specially drawn to the presence of comedones associated with the cysts in a patient with sebocystomatosis. Most cases appear for treatment because of the disfigurement, although itching in relation to the cysts has been described by Günther and Prakken.

Pathology.—The contents of the cysts in all the described cases have been yellowish or white pultaceous material, consisting of droplets of fat, chiefly cholesterol esters, fatty acids, and neutral fats. The epidermis over the cyst is usually normal. There is a narrow layer of cutis between the cyst and the epidermis. The cyst is lined by one or two layers of flattened epithelium. A layer of condensed fibrous connective tissue forms the outer wall of the cyst. In the immediate neighbourhood of the cyst, and sometimes embedded in the cyst wall, flattened atrophic sebaceous glands can be seen. Hyperkeratosis was noted by Bossellini and Prakken in the upper part of the follicle, near the orifice of the sebaceous gland. Giant cells embedded in the epithelial lining were described by Arzt.

In *differential diagnosis* it is important to distinguish sebocystomatosis from multiple lipomata and multiple xanthomata, molluscum fibrosum, neurofibromatosis, and epithelioma adenoides cysticum.

The cause of the condition is obscure. The common view is that the cysts are retention cysts ; but the retention theory is not accepted by all, and there is much evidence to suggest that they are cysts of new formation. It is probable, however, that there are many types of sebaceous cyst.

1. *Retention cysts :*
   - (i) Follicular cysts, by obstruction of the infundibulum of the hair follicle.
   - (ii) Sebaceous duct cysts, by obstruction of the duct of the gland before it opens into the hair follicle.
2. *Cysts of new formation :*
   - (i) Congenital in origin, arising from (*a*) epithelial rests ; (*b*) overdevelopment of sebaceous gland structures.
   - (ii) Traumatic implantation cysts.

Paget (1870) believed that most cysts of the scalp were cysts of new formation, although probably many cysts of the face and trunk and limbs result from distension of the hair follicles and their secretion. In support of this view he quotes Astley Cooper, South, Walther and Porta (Milan, 1856). However, he also refers to the work of Lebert and Bruns, who described a slender cord traceable from the cyst to the skin which was supposed to be formed by the obliterated duct of the enlarged and obstructed hair follicle, but he remarks that this retention type of cyst must be rare.

1.—Retention Theory

(*a*) *Hyperkeratinization.*—Bossellini showed by serial microscopical sections that hyperkeratinization was present in the hair follicle above the orifice of the sebaceous gland duct, and as a consequence he believed that sebum was retained in the hair follicle, forming a cyst. Günther and Klausner confirmed these observations, but Prakken believed that cysts were formed sometimes by dilatation of the hair follicle and sometimes by dilatation of the sebaceous gland duct.

(*b*) *Primary Hypertrophy of the Sebaceous Glands.*—Pringle regarded origin as hypertrophy of the sebaceous glands with retention of secretion. In support of this numerous hypertrophied sebaceous glands were seen in the neighbourhood of the tumours, which he removed

and sectioned. Most other observers, however, have found that the sebaceous glands, far from being hypertrophied, are actually atrophied.

2.—Cysts of New Formation

Many recent observers (literature by Benecke, 1931) have reverted to the view originally held by Paget that the majority of sebaceous cysts are cysts of new formation and that a true retention cyst of the hair follicle or sebaceous duct is rare. Benecke believed that the majority of the so-called sebaceous cysts met with clinically are more properly termed "epidermoid cysts." These arise by the accumulation of secretion from isolated rests of epidermal cells lying within the corium. Other types of cysts of new formation have been described, arising as naevoid new growths or traumatic implantation cysts.

As evidence against the retention theory attention is drawn to: (i) the rarity of cyst formation in cases of severe acne; (ii) the rarity of comedones in cases of sebocystomatosis; (iii) the difficulty of demonstrating by serial section an occluded or partially obliterated sebaceous duct; (iv) the occurrence of cysts of identical histological structure on the palms of the hands and the volar surface of the fingers, sites devoid of sebaceous glands and hair follicles.

Summary

A family presenting multiple hereditary sebaceous cysts is described. This type of case throws light upon the aetiology of the common sebaceous cyst. The evidence against the widely accepted theory of retention is discussed.

BIBLIOGRAPHY

Familial Multiple Sebaceous Cysts:

Klausner, E. (1917). *Derm. Wschr.*, **65**, 711.
Paget, J. (1870). *Lectures on Surgical Pathology*, third edition, p. 441.
—— (1870a). Ibid., p. 444.
Prakken, J. R. (1933). *Derm. Z.*, **66**, 215.
Weber, F. Parkes, and Schlüter, A. (1936). *Proc. roy. Soc. Med.*, Sect. Derm., **30**, 29.

Multiple Sebaceous Cysts (Sebocystomatosis):

Arzt, L. (1926). *Zbl. Haut- u. Geschlechtskr.*, **20**, 275.
—— (1930). Ibid., **33**, 311.
Benecke, E. (1931). *Frankfurt. Z. Path.*, **42**, 502.
Bossellini, P. L. (1898). *Arch. Derm. Syph.*, Chicago, **45**, 81.
Case report at meeting in Rostock (1929). *Zbl. Haut- u. Geschlechtskr.*, **32**, 415.
Chiari, H. (1890). *Z. Heilk.*, **12**, 189.
Choyce, C. C. (1932). *A System of Surgery*, third edition, **1**, 576.
Cockayne, E. A. (1933). *Inherited Abnormalities of the Skin and its Appendages*, p. 352, London.
Crocker, H. Radcliffe (1888). *Diseases of the Skin*, p. 572.
Gans, O. (1928). *Histologie der Hautkrankheiten*, **2**, 219.
Günther, H. (1917). *Derm. Wschr.*, **64**, 481.
Jamieson, W. A. (1873). *Edinb. med. J.*, **19**, 223.
Maclaren, P. H. (1886). *Trans. Med.-Chir. Soc., Edinb.*, **6**, 77.
Orr, H. (1923). *Proc. roy. Soc. Med.*, Sect. Derm., **17**, 11.
Pringle, J. J. (1899). *Brit. J. Derm. Syph.*, **11**, 381.
Rayer, P. F. O. (1835). *Diseases of the Skin*, p. 1038.

H. R. Hathaway, N. H. Casels, and R. M. Waters (*Anesth. and Analges.*, March–April, 1937, p. 89) review 491 administrations of oxygen in 408 patients. The oro-pharyngeal insufflation technique was used in 92 per cent. of cases. This technique was conveniently and effectively applied with few objections and little discomfort. The authors were able to confirm statistically that early oxygen treatment of anoxic patients improves results. The fact that oxygen was not restricted to dangerously ill patients brought about a relatively low mortality rate.

OSTEOCHONDRITIS DISSECANS

BY

DOUGLAS S. STEVENSON, M.B.E., M.B., Ch.B., F.R.F.P.S.Glas.

Assistant Physician, Western Infirmary, Glasgow

AND

FERGUS L. HENDERSON M.B., Ch.B.

Radiologist, Glasgow Public Health Department, etc.

(WITH SPECIAL PLATE)

The differential diagnosis of certain diseases of bones and of joints is often a matter of difficulty; aetiological factors are obscure, and treatment and prognosis rest on insecure foundations. The condition known as osteochondritis dissecans is not an extreme rarity, and has been recognized for many years, but comparatively few cases have been recorded. In the present case we believe we have grounds on which to offer an opinion as to aetiology. The results of treatment will require to be reviewed later. Trauma is still held by one group to be the principal aetiological factor, while the "non-traumatic group," to which we subscribe, disagree and believe that bone disease exists first and that following trauma the condition becomes more obvious and is diagnosed. Even then there is no unanimity of opinion as to the additional factor causing the peculiar features.

Case Record

This case, that of a well-grown lad of 15 years, was seen by one of us in August, 1935, on account of some mild pain in the right elbow-joint with slight limitation of movement. Examination did not show any joint swelling—neither fluid from a synovitis nor synovial thickening—but on moving the joint it was felt that a loose body was present which on certain movements produced pain. The history was that about six to eight weeks earlier the boy had been hit on the elbow with a cricket stump—not a violent blow, and not causing much pain or disability at the time. Clinical examination showed no other abnormality, except that he has a considerable degree of bilateral congenital nerve deafness.

X-ray examination made on August 26, 1935, showed a small bony loose body lying between the head of the radius and the corresponding articular surface of the humerus. In the outer condyle of the humerus was an irregularly shaped area of decalcification. It was found impossible to demonstrate the loose body in a lateral view, and accordingly accurate location could not be given. It was concluded that, as a result of injury, a small piece of bone had been detached from the outer condyle of the humerus and was now lying in the joint. These points are shown in the radiographs reproduced on the photogravure plate.

A surgical opinion was sought; it was decided that the loose body should be removed, and this was done. At operation the synovial membrane appeared to be perfectly healthy; there was no thickening and no excess of fluid. The loose body was composed largely of cartilage with an ossified central portion, was of the size and appearance of a white coat-button—actually 2 cm. in diameter and 0.5 cm. thick at the centre—was smooth on the flat cartilaginous surface, and rough with bony spicules on the concave surface. Some effusion occurred into the joint following operation; passive movements were not commenced for some days and were not well tolerated then. The boy was sent home after ten days with instructions to use the arm freely and to report in three months' time

—his local doctor to inform us if anything required attention sooner.

At home the boy soon played tennis—right-handed, but with difficulty in the overhead service—golfed, shot, and climbed trees. Some limitation of full flexion and especially of full extension remained, but such pain as there may have been did not require any sedatives. In general health he seemed to be very well, and was taking a good full mixed diet and living an open-air life in comfortable surroundings. The earlier signs of puberty had appeared rather more than a year previously, when he was just over 14 years of age.

Late in November, 1935—just three months after the operation—the patient reported to us again; he looked well, was well to clinical examination, and had grown and put on weight. The elbow had still some limitation of full extension; there was slight atrophy of muscles in that arm, but no pain was complained of. Further radiographs were taken; these showed that the area of decalcification in the lower end of the humerus had spread very markedly and that there was a general rarefied condition of the bones, involving the head of the radius, the outer aspect of the olecranon, and the whole of the outer half of the lower end of the humerus. The joint surfaces were involved and a considerable degree of arthritis was present. He was allowed to return to school and indulge in games generally, with the exception of Rugby football. The only incident of note was that he developed measles and was in the sanatorium for five weeks, partly as a precautionary measure and partly because he did not improve as quickly as some cases.

He was not seen by us until April, 1936, when he was again on holiday. The arm had not gained any more movement, but he used it freely and without pain. Muscle atrophy had increased, yet in general he was exceedingly well. On examination it was found that there was now some slight limitation of movement in the left elbow also, and the feeling of a loose body there. Further radiographs were taken; these showed that the active arthritic process had apparently subsided. A considerable degree of decalcification still persisted in the lower end of the humerus, and all the bones involved showed arthritic change, with complete loss of the joint surfaces, accompanied by osteophytic outgrowths.

The left elbow was examined at the same time and revealed a very obvious decalcified area in the outer condyle, similar to what had been seen in the right elbow eight months before, and a loose body was observed in the lateral view on the anterior aspect of the elbow-joint. Careful re-examination of the film of the left elbow taken on August 26, 1935, showed that this area of decalcification was present to a slight degree in the outer condyle of the humerus at that time, but this unfortunately was not noted, attention being fixed on the right elbow, which had received injury.

Further Investigations

A general radiographic examination of the body was then made with the object of discovering any additional bone abnormalities. The spinal column, hands, arms, legs, and feet all seemed normal, but there were areas of decalcification in both ischial regions. The appearances seen there were very similar to those in the elbow-joints, and on the right side there was a distinct suggestion of loose bone formation. The skull appeared to be normal, with the qualification that the sella turcica was small. It is an extremely difficult matter to be sure of any slight deviation from the normal in estimating the size of the sella turcica, but the following measurements taken of the skull in a lateral position at a distance of thirty inches do, we hold, support the contention that the pituitary fossa is on the small side. The anterior measurement from the occipito-parietal suture to the nasion was 21.5 cm., and that from the fronto-parietal suture to the base of the posterior clinoid process 12 cm., while the greatest breadth of the sella turcica was 1 cm. Apart from these no other *x*-ray abnormalities were observed.

In consequence of these findings it was evident that some general bone disease existed, and in spite of the non-syphilitic appearances of the bones a Wassermann test was done and proved negative: the nerve deafness had also been suggestive. A diagnosis of osteochondritis dissecans was made: the apparent excellent general health of the boy, the lack of pyrexia, the increase rather than decrease in weight, the fact that no joint swelling existed, all disposed of the idea of tuberculosis. The recurrent loose bodies, the worm-eaten appearance of the bone whence these had come, and the bone decalcification all suggested osteochondritis. A central nervous system lesion—for example, syringomyelia—was ruled out, and no cervical ribs were present to cause nerve involvement. An investigation into the boy's inorganic retention suggested itself and was made, with the following results.

Two specimens of blood—non-oxalated—were taken at an interval of five days. The first revealed a marked lipaemia which was apparently temporary—a previous one taken for the Wassermann test and the second, or rather third, one not showing this. The principal findings were:

Plasma:		
Alkali reserve	.. ..	57.0% CO_2
Inorganic phosphorus	..	0.005% P
Chloride	.. .. ..	0.60%
Whole blood:		
Cholesterol	.. .. ..	0.15%
Serum calcium content	..	0.01% Ca (0.014% CaO)
Urine:		
Acidity	.. .. ..	22.0 c.cm. N/10 NaOH%
Urea	.. ..	1.4%
Ammonia nitrogen	..	0.045%
Total nitrogen	.. ..	0.698%
Ammonia coefficient	..	6.4%
CaO excretion	.. ..	0.007% CaO

The principal point here is the low calcium excretion in the urine—with a normal blood calcium (as is usual even in rickets, etc.); it suggested that the absorption of calcium was defective. The boy was having a diet with plenty of lime in it and no lack of vitamin D. The other points of note are the high inorganic phosphorus—but this is usual when growth is active—and the tendency towards an acidosis.

A full examination of blood and of urine otherwise showed 90 per cent. haemoglobin, with 5,200,000 erythrocytes and 5,600 leucocytes per c.mm. The reticulocytes numbered 1.5 per cent. and the platelets 100,000. Films revealed no abnormality of cells. The low platelet count was not associated with an increase in either bleeding or coagulation time, but clot retraction was imperfect. The urine contained a haze of albumin, which was proved to be orthostatic in type, and to be serum albumin and not globulin. No tube casts were present, and the blood pressure was 100/60. The family history was inquired into, with special reference to bone disease and to haemophilia—all with negative result. The patient had not blue sclerotics, nor had any been noted in the family.

A Basis for Treatment

Consideration of all the findings suggested to us that there had been some alteration in the gonad-pituitary balance at puberty which had resulted in defective absorption of lime, with consequent withdrawal from bone

to keep up the blood calcium. No evidence of other endocrine disturbances was present, and there was no suggestion of alteration in thyroid or parathyroids. This gradual withdrawal of lime had rendered the bones more liable to damage from mild trauma, and had been the cause of the unusual sequelae.

Treatment was directed towards increase in lime intake plus vitamin D to increase absorption. Four pints of milk and 2 drachms of cod-liver oil daily were prescribed, with the result that in two weeks' time the urinary lime had risen to 0.008 per cent. CaO. This rise may appear trivial, but it is significant, and when the increase in urinary output is considered in connexion with the four pints of milk ingested, must represent considerable improvement in absorption and perhaps utilization. Three weeks later he was again examined and urinary specimens obtained. His height has increased by three-quarters of an inch in three months and his weight by 1 st. The urinary output of calcium has risen to 0.016 per cent. CaO. Further radiographs in two months' time should show whether this lime is being redeposited in bone.

Commentary

A consideration of the literature of the subject reveals that osteochondritis dissecans always occurs in adolescents, usually males, and that it may be unilateral or bilateral. There are points of similarity between it and Perthes' disease, and, like this, it would appear to become inactive once adolescence is completed and to leave the subject disabled to a lesser or greater extent. This is not in favour of a vascular origin; it might be in favour of a "bland mycotic fungoid" origin, but is much more suggestive of some imbalance of growth factors at a time when these are approaching different stages—the one its greatest activity, the other its termination.

The experimental work of Mirvish and Bosman (1928–9) on the effect of gonad extracts on blood calcium and also that on suprarenal extracts supports us in our theory that osteochondritis dissecans is in reality a temporary hypergonadism, the gonad activity causing a constant lowering of blood calcium, with consequent withdrawal of lime from bone in order to keep up the blood calcium level. The normal food calcium supply is either deficient in the circumstances or is insufficiently absorbed and utilized. The result of this process is that decalcification occurs, and, as shown in one of our radiographs, is present before trivial injury causes a dislodgement of a piece or pieces of bone and attached cartilage. It is admittedly difficult to explain why the decalcification should occur more markedly in the irregular worm-eaten way in which it does, but possibly recurrent trauma may be the explanation.

For the biochemical examination of the above case we are indebted to Dr. S. V. Telfer of the Western Infirmary, Glasgow.

LITERATURE

King, E. S. J. (1935). *Localized Rarefying Conditions of Bone*. p. 373. Arnold and Co., London.
Köhler, A. (1929). *Roentgenology*. Fifth edition, translated by Turnbull, p. 168. Baillière, Tindall and Cox, London.
Brailsford, J. F. (1934). *The Radiology of Bones and Joints*. pp. 68, 138. J. and A. Churchill, London.
Mirvish, L., and Bosman, L. P. (1928–9). *Brit. J. exp. Biol.*, **6**, 350.
Fairbank, H. A. T. (1933). *Brit. J. Surg.*, **21**, 67.

In the first two references an extensive bibliography is given.

ADDENDUM.—Clinical examination, and radiographs of November, 1936, show that the boy is now in excellent health. He uses his left arm normally and without pain or restriction, but still has restriction of his right elbow. The radiographs show that recalcification has taken place to an extent that the bones are now normal in appearance.

ENDOMETRIAL BIOPSY

BY

ALBERT SHARMAN, M.D., B.Sc., M.C.O.G.

Assistant Surgeon, Royal Samaritan Hospital for Women, Glasgow

AND

H. L. SHEEHAN, M.D., M.Sc.

Director of Research, Glasgow Royal Maternity Hospital

(WITH SPECIAL PLATE)

For over three years certain investigations into the endometrium in sterility and anovular menstruation (Sharman, 1935) have involved frequent biopsy examinations of uterine mucosa. Much need was felt for a really satisfactory biopsy method which, from the clinical point of view, could be applied to the unanaesthetized patient without causing any real pain, and which, from the pathological point of view, would provide a sufficiently large strip of undistorted mucosa for microscopical examination.

Various techniques have been tried: curette, punch, and suction. Using a specially made narrow curette, similar to that described by Hoffmann (1934), the piece of mucosa removed was sometimes of sufficient size, but it was frequently lost in the uterus. To avoid this the stem was made hollow and suction applied through the stem with the object of holding the curetting, but this was not wholly successful. Suction methods similar to those of Klinger and Burch (1932), Novak (1935), and Tamis (1936) gave better results. The simplest and most satisfactory modification was a segment of gum-elastic catheter with the end cut off; the cannula so formed was attached to a 10 c.cm. syringe. The end of the cannula was pressed firmly against a piece of the fundal mucosa, and the piece was sucked off by means of the syringe. The fragments so obtained were often satisfactory, but were sometimes rather disappointing histologically. In addition, it was sometimes difficult and occasionally impossible to introduce the tube into the uterus, and anaesthesia was found necessary.

The New Technique

To overcome these various imperfections in the technique proved eminently satisfactory after extensive trials. Nearly all these have been on nulliparae, several with infantile uteri; naturally the procedure is even easier in multiparae. The instrument is very simple in construction and use. The basic idea is that, whereas an ordinary curette has to be made so that it can reach the fundus, there is no need in endometrial biopsy for the curetting edge to go into the upper centimetre of the uterine cavity. It is therefore possible to place a small chamber to receive the curetting in the rational place—beyond the cutting edge. The piece of endometrium slides into this chamber as it is cut, and lies in the same position as it did in the uterus. There is no folding back of the curetting as occurs with an ordinary curette, and none of the distortion and tearing apart that is frequently produced by the suction methods. The instrument consists of a 5 cm. length of 3 mm. metal tubing attached to a shaft and handle of the same shape and size as an ordinary uterine sound. The diameter is practically constant throughout head and shaft. The part of the tube near its attachment to the shaft is filed away so that only one-third of its circumference remains. The last 1.8 cm. of the tube at the tip is left intact. The filed edge of this part of the tube, forming two-thirds of the original circumference, is sharpened and slightly undercut at the sides to form the

curette edge. The tip of the instrument is made slightly conical, but the lumen is left open (Figs. 1, 2, and 3). Biopsy curettes of this type can also be made with a shorter tube at the tip so that mucosa is obtained from nearer the fundus; these have proved equally satisfactory in practice, except that the curetting is correspondingly shorter.

In obtaining the specimen the patient is placed in the lithotomy position and the usual antiseptic precautions are taken. The cervix is then pulled down with vulsellum forceps, and the biopsy instrument is slid into the uterine cavity exactly as a uterine sound, no previous dilatation being necessary, in contrast to most other methods. The curette is placed against the mucosa of either the anterior or posterior wall drawn downwards for about an inch, and then withdrawn through the cervical canal, avoiding any pressure of the curette edge against the cervical wall. After removing the curetting any further specimens of mucosa required can be obtained by reinserting the instrument. Some discomfort is usually felt at the moment when the instrument first passes the internal os, but this goes off immediately. There is also some discomfort when the tip of the instrument touches the fundus, and to a much lesser degree during the actual curettage. This is referred to the lower abdomen. It is normally no more severe than to make the patient wince slightly. Neither at the time of the biopsy nor subsequently is the average patient any more disturbed than she is by an ordinary vaginal examination. No after-treatment or care of any sort is required. The absence of any real pain is very important from the point of view of obtaining the patient's co-operation when subsequent biopsies or a series of them are desired. On this point the present method appears to be a marked improvement on the suction methods. For example, endometrial biopsy by this method has been performed in three cases every day for a whole month without any disturbance or concern to the patients at all.

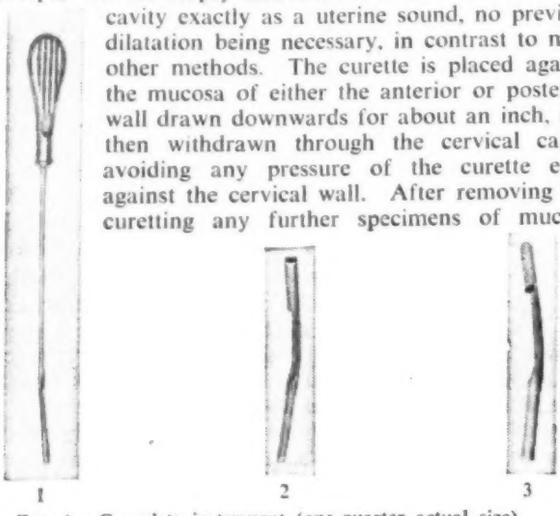


FIG. 1.—Complete instrument (one-quarter actual size).
FIGS. 2 and 3.—Details of head of curette (one-half actual size).

The curetting is found lying flat, with its mucous surface downwards, in the tube at the tip of the curette. In most cases a solid piece of endometrium nearly 2 cm. long and 3 mm. in diameter is obtained; this is much more satisfactory than the fragmented material obtained by certain other biopsy methods, though it is of course not possible to obtain such enormous curettings as those illustrated by Tamis (1936). The piece of endometrium is easily slid out of the tube by pulling its lower end gently with a needle, and is then placed, mucous surface upwards, on a piece of thin card and dropped into fixative. In this way it is possible to orientate the block later so as to obtain longitudinal sections vertical to the mucous surface. This makes the histological interpretation much more easy and reliable. Fig. 4 (see Plate) shows the naked-eye appearance of a typical section of endometrium on an ordinary 3-inch by 1 inch slide and Fig. 5 its microscopical appearance.

Conclusion

There is no need here to stress the great diagnostic value of endometrial biopsy in many conditions, particularly in the investigation of sterility in women and of disturbances of menstruation; but mention may be made of its definite scientific value in studying the endometrial responses to various hormones. It is obviously a great advantage to be able to obtain endometrium for examination by a simple out-patient or consulting-room procedure without anaesthesia, without risk, and with no real pain. Endometrial biopsy has up to now not been employed as extensively as it might because the methods have not been sufficiently simple and reliable, and also because the histological value of the material obtained has been rather uncertain. With the instrument described here the main difficulties in endometrial biopsy appear to have been overcome.

The instrument was made for us by G. B. Ritchie, 249, Buchanan Street, Glasgow.

REFERENCES

Hoffmann, P. E. (1934). *Amer. J. Obstet. Gynec.*, **27**, 616.
Klinger, H. H., and Burch, J. C. (1932). *J. Amer. med. Ass.*, **99**, 559.
Novak, E. (1935). *J. Amer. med. Ass.*, **104**, 1497.
Sharman, A. (1935). *British Medical Journal*, **1**, 500.
Tamis, A. B. (1936). *Amer. J. Obstet. Gynec.*, **32**, 505.

EPILEPSY AND CYSTICERCOSIS

BY

A. J. P. ALEXANDER, M.D.Belf., M.R.C.P.I. M.R.C.P.Lond.

Honorary Teacher of Medicine, University of Bristol; Senior Medical Officer, Winsley Sanatorium, near Bath

(WITH SPECIAL PLATE)

Clinical notes of the following case, with a radiograph, are placed on record to call renewed attention to the fact that the cysticercus stage of *Taenia solium*, though usually passed in the pig, can develop in man, and that patients so infected generally come under observation when suffering from attacks of "epilepsy" or from other neurological symptoms and signs that cannot easily be accounted for by a single lesion in the nervous system.

Case Record

A man aged 32, a stone-sawyer by trade, was admitted to the sanatorium in January, 1936, with a history of twelve months' cough and a recent haemoptysis; also that he was subject to epileptic fits.

History.—As a child he does not recollect any ill-health. He joined the Army in 1919 and served until 1926. Most of this time was spent abroad, first in Egypt, later in India. In 1920 he was in hospital for a brief period with a vague illness, which took the form of "pains in the right side of the body." In 1922, 1924, and 1925 he believes he had slight attacks of malaria. In November, 1926, without previous warning, he suddenly became "dizzy and fainted, but soon recovered." After a fortnight's interval he had a similar attack, and at irregular intervals until the present time he has been subject to recurring seizures. At first there was usually a seven-day to ten-day interval between the fits; latterly this was increased to as long as two to four months. Subsequent fits started with twitching in the right foot and right leg, and often affected the right arm and right side of the face; consciousness, though temporarily dulled, has never been quite lost. He has fallen, but has never hurt himself. The tongue has not been bitten, and there has been no

loss of sphincter control. Each convulsion continues for a varying period, generally five to fifteen minutes, the maximal duration being four hours. Headache, often severe, with some mental dullness, remains for one to seven days after each attack.

In 1932 he began to lose power in the right side of the body, particularly following attacks, recovering only partially in the intervals between. Prior to admission he had been examined in a general hospital on five separate occasions and once in a special hospital. Complete examination of the central nervous system, including ventriculography, had failed to indicate the nature of the lesion, and radiographs of the skull appeared normal. No definite diagnosis was made, disseminated sclerosis and cerebral neoplasm having been put forward as tentative diagnoses.

Examination.—Respiratory System: Signs indicative of pulmonary tuberculosis were found in the right apex. The purulent sputum showed tubercle bacilli. A radiograph of the lungs confirmed tuberculous infiltration of the right upper and middle zones, and showed scanty mid-zone infiltration on the left side.

Nervous System: Memory good; can give a clear and concise history. Horizontal nystagmus present. Cranial nerves: nothing abnormal. All arm movements are slightly weaker on the right side. Co-ordination is good, and there are no tremors. All sensory functions—that is, touch, pain, temperature, position, recognition of objects, weight, and vibration—are present in both arms, but are diminished on the right side. Tendon reflexes on the right side are all exaggerated. The right leg is weaker than the left, and the right tendon reflexes greater. The right sensory functions are diminished. Superficial reflexes: abdominals present, but the left weaker than the right; cremasters present; plantars—plantar flexion. During or following a fit the plantar reflex on the right side has been found to give an extensor response. Nothing else abnormal was observed.

A radiograph of the chest showed four small oval calcified opacities 4 mm. long and 1–2 mm. wide in the soft tissues on each side of the neck. The nature of these was not at first suspected. To discover if more were present elsewhere a film of the abdomen was taken. This at once cleared up the diagnosis. Subsequent films of the limbs and the skull have been taken, and the film reproduced will speak for itself, the calcified cysticerci being clearly demonstrated. There was no history of tapeworm infection in this case.

Commentary

Cases of this nature are undoubtedly a great rarity, but it is important to bear in mind the possibility of cysticercus infection in "difficult" nerve cases.

1. The onset of fits, often Jacksonian in type, in an adult and extending over a period of years—no obvious cause being found—is suggestive.

2. The clear history of residence abroad is important, but cases are described in those who have never left the country. A prolonged latent period may occur between infection and symptomatic or clinical manifestation.

3. Palpable recurring subcutaneous or intramuscular cysts, sometimes a feature of this disease, have never been demonstrable in this case.

4. Once calcification has occurred radiological examination of the muscular and soft tissues is necessary if suspicion of the disease is aroused, as radiographs of the skull are of negative value, calcification of brain cysticerci occurring with extreme rarity.

On examination of the skull radiograph in this case one opacity appears to be in the masseter muscle. If the calcified deposits are scanty or doubtful these can be excised and examined microscopically for hooklets.

Prognosis.—This is generally stated to be uncertain: mental deterioration is to be looked for, though in this case, with symptoms since 1926, mental efficiency would appear to be normal.

Treatment.—This is purely symptomatic, and surgery has no place in treatment.

Clinical Memoranda

"Mixed Tumour" of the Lip

(WITH SPECIAL PLATE)

A man aged 49 had for twelve years a slowly growing painless swelling of the upper lip, which first appeared after a blow from the starting-handle of a motor, which knocked out four teeth but did not cut the lip.

There was a visible protrusion of the right side of the upper lip. Eversion of the lip revealed a hemispheroidal tumour with a maximum diameter of about an inch, having a flat surface on its inner aspect, which was normally in contact with the maxilla. The mucosa over this surface was white and adherent to the tumour, but apart from this attachment the tumour moved freely within the lip. At the periphery of the tumour several prominent vessels passing into it were visible. The tumour was uniformly firm in consistency. Its appearance when the lip was everted is shown in the photograph (Plate, Fig. 1). The tumour was excised with the overlying attached mucosa.

Specimen.—A hemispheroidal tumour of diameters 2.5 cm. and 1.5 cm. It is firm and encapsulated. The cut surface is smooth, opaque, and white, except for a central area which is brownish. Microscopically the tumour consists of a fibromyxomatous stroma in which are set groups of cells for the most part arranged in well-formed acini containing pink staining material (Fig. 2). The acini occur singly and also in closely packed groups. At the periphery of the tumour, but within its capsule, is a group of acini composed of larger cells and resembling a normal mucous gland. Mucicarmine shows the presence of intracellular mucin (Fig. 3). In the centre of the tumour there is much pigmentation, giving the Prussian blue reaction. The tumour belongs to the so-called "mixed" group that occurs in the salivary glands and other situations.

COMMENT

The lip is one of the rarest sites for "mixed" tumours, but the occurrence of this rarity has long been recognized. Sir James Paget (1870) described a case that is almost identical with that reported here. It was "that of a healthy-looking man, some years ago under the care of Mr. Lloyd. A tumour had been growing in his upper lip for twelve years. It was not painful, but the protrusion of the lip was inconvenient and ugly, the swelling being an inch in diameter. It was embedded in the substance of the lip, both skin and mucous membrane being tensely stretched over it. Its form was nearly hemispherical, its posterior surface being flattened as it lay close on the gums and teeth, its anterior convex and smooth. Its whole substance was firm, tense, and elastic. Mr. Lloyd removed the tumour with the mucous membrane over it, leaving the skin entire. The tumour was firm, slightly lobed, yellowish white, smooth. In general aspect it resembled the mixed tumours over the parotid, but in minute structure it presented as perfect an imitation of lobulated or acinous gland structure as any mammary glandular tumour. . . . I heard some months afterwards that another tumour was growing in the same

lip; but the patient was lost sight of." An earlier case, probably of the same kind, was reported by Sir W. Lawrence (1832). He removed a tumour from the lip of a young lady of 19. "Its substance was whitish, compact, tough, and almost of cartilaginous firmness, resisting the knife so as to cut with some noise."

Since that time many such cases have been reported. Ahlbom (1935), in his exhaustive monograph "Mucous and Salivary-gland Tumours," has collected cases of his own and other authors. His figures and those quoted from other sources give an idea of the frequency of these tumours in the lip. In Ahlbom's 254 cases of mucous- and salivary-gland tumour there were two in the lip. In 422 cases reported by Ahlbom, Wood, Schreiner and Mattick, and Patey there were eight examples in the lip. These tumours of the lip are generally thought to originate in the labial glands in the lateral portion of the submucosa of the upper lip.

ROBIN PILCHER, M.S., F.R.C.S.
First Assistant in the Surgical Unit, University College Hospital.

REFERENCES

Ahlbom, Hugo E. (1935). *Acta radiol.*, Supp. 23.
Lawrence, Sir W. (1832). *Med.-Chir. Trans.*, **17**, 28.
Paget, Sir J. (1870). *Lectures on Surgical Pathology*, p. 567, third edition, Longmans, Green and Co., London.

Precipitate Labour

From time to time unusual obstetrical cases are recounted in the *Journal*, and the following case, having a number of points of interest, appears to be worth recording.

A married woman aged 35 who had borne two children, the first twelve years ago and the second three years ago, consulted me in October last about palpitation and debility. There was a very slight enlargement of the thyroid gland and just a perceptible degree of exophthalmos. The pulse rate was 100. She stated that her "periods" had been in abeyance for some five or six months, but at once added that she was satisfied she was not pregnant, as no increase in girth or any other symptoms had shown.

She came to see me again twice before the year ended, and it was evident that her symptoms of hyperthyroidism were improving She made no further reference to the missed "periods," and I confess that aspect of the condition was not kept in my mind.

Early in January one midnight I had a telephone message to come to her as she had had a baby, which the person delivering the message believed was dead. I found that she had gone to bed in her usual health and at 11.30 had wakened with a colicky pain and hurried to the water-closet feeling that she was going to have diarrhoea. She had a bearing-down feeling, and the baby was forthwith delivered into the pan of the closet. She got up quickly, scarcely knowing what had happened. The cord snapped (about its middle part) as she rose. Then only did she realize that she had delivered herself of a child. She was able to lift the infant out of the pan, lay it on the floor, and stagger along the passage to her bedroom. She woke her husband and told him what had occurred; then she rubbed her eyes and said, "Have I been dreaming?" She was unable to believe that what had happened was real.

When I arrived she was not losing any blood and the placenta was ready for expulsion. This was approximately one hour after the birth. On the bathroom floor still lay the little cold baby; but it was breathing, and indeed crying, and had suffered no injury from its precipitate delivery. There had been no bleeding from the torn cord. The child was a female; its weight was 5¼ lb. Both mother and child did well.

The mother assured me she had never for one moment considered she was pregnant, and the birth was to her as astonishing as it was to her husband and to myself.

Edinburgh. A. F. WILKIE MILLAR.

Reviews

BIOCHEMISTRY AND METABOLISM

An Introduction to Comparative Bio-Chemistry. By Ernest Baldwin, B.A., Ph.D. Foreword by Sir F. Gowland Hopkins, F.R.S. (Pp. 112; illustrated. 5s. net.) London: Cambridge University Press. 1937.
The Metabolism of Living Tissues. By Eric Holmes, M.A., M.D. Foreword by Sir F. Gowland Hopkins, F.R.S. (Pp. 235. 7s. 6d. net.) London: Cambridge University Press. 1937.

Comparative biochemistry has not hitherto appeared as a textbook subject. Such material as might be regarded as constituting this branch of biochemistry has been scattered in highly diffuse form through the literature of the various biological sciences. Dr. Baldwin has collected and marshalled the more important and fundamental matter and presented it in a little volume which reads more like a fascinating story than a textbook. It is chiefly concerned with the relationship of the organism to its environment. Adaptation and evolution are shown to depend upon the development of special regulatory mechanisms to govern such closely interrelated phenomena as osmotic pressure, ionic equilibrium, excretion, and respiration. The several mechanisms are discussed in turn, with a wealth of illustration drawn largely from the lower forms of animal life. If special reference is made to the lower rather than to the higher animals this leaning is justified if only because the biochemistry of the former opens up what is, to the average student, a completely new territory, and the book gains considerably in interest accordingly. How few of those who are well informed on such subjects as the excretion of nitrogen and uraemia in man have ever heard of the physiological uraemia of the marine elasmobranchs! The comparative study is not only the youngest but also the most fundamental of the branches of biochemistry, and therefore such a simple, lucid, and stimulating presentation as is offered in the present volume can be thoroughly recommended to the attention of students beginning their biochemical studies. They are bound to acquire from it an interest in the subject which will carry them on to a deeper study of both this and other branches. Among those who in addition to the present-day student will find the volume of absorbing interest are members of an older generation whose approach to biochemistry was directed on entirely different lines, and those of a wider public who take a general interest in fundamental scientific problems.

The Metabolism of Living Tissues, by Dr. Eric Holmes, is a companion volume to that which has been reviewed above. Both are written by distinguished members of Sir F. Gowland Hopkins's staff at Cambridge. They have been prepared simultaneously, and have a complementary relationship. In this, the larger book, biochemical concepts such as are made use of in the other are explained in fuller detail, and while the comparative branch is essentially devoted to the metabolism of the lower animals the present volume is chiefly based upon the results obtained by the investigation of mammalian tissues. The book covers a large field in fundamental biochemistry, but the treatment of subjects contrasts markedly with that of the usual textbook, in which sections devoted to the chemistry of the biologically important substances are separated from, and precede, discussion of metabolic problems. Here such pure chemistry as is germane to the subject is suitably woven into the text, and in such a way as to put the emphasis upon the dynamic side of the activity of the

living tissues. Special attention is given to the discoveries achieved by recourse to the "tissue-slice" technique, which has contributed so largely to our understanding of the metabolic changes taking place in individual tissues, especially the liver, but also the kidney, muscle, and nervous system. The book is exceedingly well written in clear, easy-flowing style, maintaining a continuity which makes it a pleasure to read right through at one sitting, even while recognizing that most sections will require much closer study afterwards. This particularly applies to those parts which deal with recent discoveries responsible for a complete reorientation of ideas. The newly established mechanism of the synthesis of urea is but one of a number of examples that might be quoted. Beginners especially will appreciate the inclusion of brief explanations of the nature of the actual methods of investigation, in that they contribute considerably to an intelligent understanding of the work of the specialist. The only critical comment that might be made is that towards the close of the chapter on the nervous system a number of special terms are left unexplained, and that the hormones have become such a vast subject in themselves that the short chapter devoted to them suffers from the necessity of over-compression. But mention of these minor points in no way alters the general conclusion that the book represents a contribution of major importance to biochemical literature, and the high commendation expressed in the foreword by Professor Hopkins will be universally endorsed.

GUIDANCE IN CHOOSING A CAREER

Handbook of Vocational Guidance. By C. A. Oakley, B.Sc., Ed.B., and Angus Macrae, M.A., M.B. (Pp. 337. 10s. 6d. net.) London: University of London Press. 1937.

This book has been written for school teachers and others who have to advise on the choice of a career for secondary and public school children. Dr. C. S. Myers in his introduction says: "The art of vocational guidance is still too immature and is in a stage of too rapid development to allow for a treatise being yet written upon its theory and practice. . . . Nor is it a technique which can be learned from a textbook. Vocational tests and intelligence tests must be the adviser's servant . . . they must never be his master." The greater part of the work "is of the nature of a book of reference, consisting of notes of the chief abilities and qualities which the vocational adviser should seek to assess." The rest sets out the results of a "survey of occupations" undertaken by one of the authors, who approached directors or secretaries of over fifty organizations with a view to ascertaining the length of training and the psychological and physical qualities required of entrants to certain occupations, and the numbers of annual vacancies which usually occur in each occupation.

The modest, almost depreciatory tone of the claims made for this book disarm criticism. But we think that space might have been found for a fuller description of the methods and tests themselves, and for more guidance concerning the actual choice of tests. Perhaps, also, insufficient emphasis is placed upon the importance and the actual diagnosis of the "emotional background of success in work." It seems to us that wider use could be made of "vocational guidance" as a means of discovering those children who are in need of expert medical and psychological treatment. It is not enough to know that "John is unfit to be a doctor": it is more important to find out whether his unfitness is really "constitutional" or intellectual in origin, or whether it is due to faulty emotional habits or adjustments. It is more important still that those emotional faults should be properly treated. When further experience of vocational guidance has been obtained it will probably be found that occupations can be classified much more simply than Chapter VI of this book would suggest. Many of the intellectual, physical, manual, and other "dexterities" which are studied by persons engaged in vocational testing will take a subordinate place in career selection in comparison with the importance that will be accorded to emotional, social, and medical factors. It is not fair, however, to judge a book by what it does not contain. When all is said, experience shows that a great deal of very valuable help in the choice of a career can be obtained by expert vocational guidance.

The handbook shows how important is the field of work which is opening out before those who are prepared to make a thorough study of vocational guidance. It begins with a chapter in which the need for vocational guidance is explained. Chapter II discusses the nature of intelligence and of "special abilities," and contains a statement of the degrees of intelligence considered to be necessary for various classes of occupations, and a tabular summary of the educational standards to which students must attain before they can enter the universities, etc. In Chapter III brief accounts are given of the various tests that have been and are being used for "testing" both intelligence and a number of special abilities. A short (and we feel inadequate) chapter on the technique of vocational guidance follows. Two hypothetical cases are then described in Chapter V, and the rest of the book consists of a survey of the "occupational requirements" which are thought to be desirable for about 124 occupations suited to secondary and public school children. This chapter occupies nearly 200 pages, and contains valuable information, though with a good deal of repetition.

This volume should be a useful reference book for teachers, doctors, and parents, and others who are concerned with the choice of a career for young people.

A CONNOISSEUR OF NATURE

Traveller's Rest. By Philip Gosse. (Pp. 281. 8s. 6d. net.) London: Cassell and Co. Ltd. 1937.

In the opening chapter of *Traveller's Rest* Dr. Philip Gosse suggests that he and the reader should "stroll along together, calmly, unhurriedly, in friendly and intimate converse, ready on the slightest pretext to stop and admire a flower, to watch a beetle cross the path, to mourn over a dead shrew, to listen to the song of a bird, or to sit and gaze up at the clouds or at a distant view." This sentence is an epitome of the book. Dr. Gosse knows how to find "sermons in stones, books in the running brooks, and good in everything," though he would qualify the last word of the quotation by vigorously excepting the vandals and iconoclasts who are rapidly destroying the beauty and character of our countryside and the charm of our villages. The collectors of birds' eggs deservedly provoke his generous rage. He also gives a timely warning to genuine but thoughtless birdlovers. The careless breaking or displacement of a twig may expose a carefully concealed nest to the keen sight of a bird's natural enemies; traces of human or tobacco scent may blaze the trail for a destroyer. Dr. Gosse draws these conclusions from his own observations at Beaulieu, where, as a country practitioner before the war, he ringed more than fourteen hundred birds of fifty-nine different species in one season. The four chapters devoted to birds also include a charming study of bird lore, the fruit of happy researches in long-forgotten books, blended

with the unwritten legends which still persist in country places. From birds the author passes to a spirited defence of coarse-fishing, stoutly maintaining that a tench or a perch is as handsome as a trout, and citing Confucius as an addict of the poor man's sport. Another chapter deals with Sussex saints: St. Cuthman, whose memory is still cherished in the town of Steyning, and the virgin-martyr, St. Lewinna, whose holy remains were abducted from the church at Alfriston where they had lain for nearly four hundred years, and removed to Dunkirk.

This is a delightful book, a worthy successor of *Go to the Country*. Dr. Gosse is a connoisseur in the best and widest sense, who shows a generous determination to share his pleasures not only with his friends but also with the wide circle of his readers.

CONGENITAL HEART DISEASE

Atlas of Congenital Cardiac Disease. By Maude E. Abbott, B.A., M.D., F.R.C.P.Canada. (Pp. 62; 200 figs. 5.50 dollars. New York: American Heart Association. 1936.

No name has become more closely linked with a specialized branch of medicine than that of Dr. Maude Abbott, who is an acknowledged authority on congenital heart disease. Her present work, an *Atlas of Congenital Cardiac Disease*, has several claims to the attention of those interested in cardiology and the history of medicine. In the first place, the author's name gives this volume the stamp of expert knowledge; secondly, it integrates a vast mass of material gathered from the literature, and by presenting a tabulated analysis of 1,000 cases of congenital heart disease gives a valuable impression of relative frequency or rarity of the various forms of congenital lesions; thirdly, the individual abnormalities are explained not only by the text on the left-hand side at each opening but also by photographs, diagrams, *x*-rays, and electrocardiograms in apposition. For the most part these illustrations are clear and apt; they relate to human morbid anatomy, and also to comparative anatomy and embryology.

Dr. Abbott has adopted the classification by which all lesions incapable of producing cyanosis are grouped under "acyanotic lesions," while those in which a shunt between the right and left side of the heart gives permanent cyanosis are referred to as the "cyanotic group"; those in which a shunt only produces cyanosis in certain circumstances when the relative pressures on the two sides of the heart are disturbed belong to the category of "cyanose tardive." This volume must be included among the few modern medical publications destined to become classics.

EXTRA-ORAL MEDICATION

Parenteral Therapy. By Walton Forest Dutton, M.D., and George Burt Lake, M.D. (Pp. 386; 90 figures. 34s.) London: Baillière, Tindall and Cox. 1936.

This book contains a large amount of useful information. Its scope is described by the subtitle, "A ready reference manual of extra-oral medication for physicians, dentists, pharmacists, chemists, biologists, nurses, medical students, and veterinarians." A surprisingly large number of methods of administering drugs other than by the mouth have been devised, and these have steadily increased in popularity during recent years. Many of these methods involve somewhat complex techniques and mistakes can have extremely undesirable results. The authors have collected this varied and scattered information into a single volume. Apart from the general methods of hypodermic, intravenous, and intraspinal injection, many other special techniques are described, such as continuous intravenous infusion, blood transfusion, pneumothorax, sclerosis of varicose veins and haemorrhoids, and ionic medication. The chief methods used in each case are described fully, and the description is amplified by the free use of illustrations. These descriptions take up half the book, and the second half is occupied by a therapeutic index and by a dictionary of drugs used parenterally. These latter sections do not, however, present any strikingly original features.

The volume will be found of practical service by a wide variety of practitioners of medical and allied sciences, because it describes numerous techniques, the successful employment of which depends on accuracy in regard to detail. The prominent rôle assumed by the hypodermic needle in modern medicine is often a subject for comment, and it is interesting to note that this volume includes a table detailing about two dozen types and sizes of needles and their appropriate uses.

Notes on Books

It may fall to the lot of any practitioner in this country, however imperfectly qualified for so specialized an undertaking, to perform a post-mortem on a case either of death from natural causes or of poisoning or some other condition of medico-legal importance. To such occasional morbid anatomists Dr. JOAN ROSS's *Post-mortem Appearances* (third edition, H. Milford, 7s. 6d.) is an indispensable guide. Unlike most other such works, it departs from a regional arrangement and describes the essential findings to be expected in each disease or other morbid condition; it is thus possible for the operator with any clue to the nature of the case to refresh his memory beforehand and approach the task with a knowledge of what to look for. The amount of information given is surprisingly large for so small a book, and the student engaged in the post-mortem room can also benefit from its use, with the added advantage that when he detects a departure from the usual appearances he should be able to ascertain its why and wherefore by personal inquiry. We are not suggesting for one moment that reference to these pages can take the place of a sound knowledge of morbid anatomy, but in so far as lack of experience can be compensated for in such a way this book provides reliable information in an easily intelligible form.

In *L'Année Therapeutique* (Masson, 20 fr.) Dr. A. RAVINA has again collected the recent advances in treatment and arranged them in three groups—maladies and symptoms, methods and technique, and medications. Within each group the arrangement is alphabetical: acne treated by an oestrin ointment is the first article, and the use of vitamin C for such conditions as herpes zoster and asthma completes the book. This is the eleventh year of issue of this useful little work, and it contains a special index for the volumes covering 1931–5.

As a result of considerable hospital and private experience Mr. B. A. KOPKIN has attempted, and with considerable success, the difficult task of writing a *Dental Surgery for Medical Practitioners* (H. Kimpton, 5s.). The author has aimed at presenting briefly the fundamentals of dental practice; and in eighteen short chapters delineates the dental conditions that cross and often darken the path of the general practitioner. The descriptions are mostly clear and sufficient, but now and then a curious word appears—for example, at page 26, *undermined* which seems to mean *underlain*. The author draws special attention to the chapter on "gas" administration, and if he can do something to counteract the "whiff of gas" attitude so common among doctors he will deserve the thanks of the dental profession. He

describes also the use of local injection anaesthesia, but his list of contraindications both for gas and injection anaesthesia are so similar that the reader may wonder whether there be not a third unmentioned anaesthetic.

The book entitled *The Diary of Vaslav Nijinsky* (V. Gollancz, 10s. 6d.) represents a translation by his wife, Mme. ROMOLA NIJINSKY, of the great dancer's account of various incidents in his life, including his homosexual attachment to Diaghilev. The diary, which was written in 1918–19 after the onset of the psychosis which has been diagnosed by psychiatrists as schizophrenia, shows the characteristic features of a disordered mind such as incoherence, megalomania, and delusions of persecution. The text is interspersed with portraits of Nijinsky at different stages of his career and with several of his drawings, which are similar to many of those made by subjects of schizophrenia.

In our issue of April 20, 1935, we reviewed *Oxygen and Carbon Dioxide Therapy* by Drs. ARGYLL CAMPBELL and E. P. POULTON. These authors have now issued in pamphlet form an addendum on The Oxygen Tent and Nasal Catheter, most of which appeared in the article by Dr. Poulton and Mr. T. W. Adams in the *British Medical Journal* of March 21, 1936. The pamphlet will be supplied gratis to purchasers of the book who notify the Oxford Medical Press, Amen House, Warwick Square, E.C.4.

Preparations and Appliances

LION FORCEPS FOR HALLUX VALGUS OPERATION

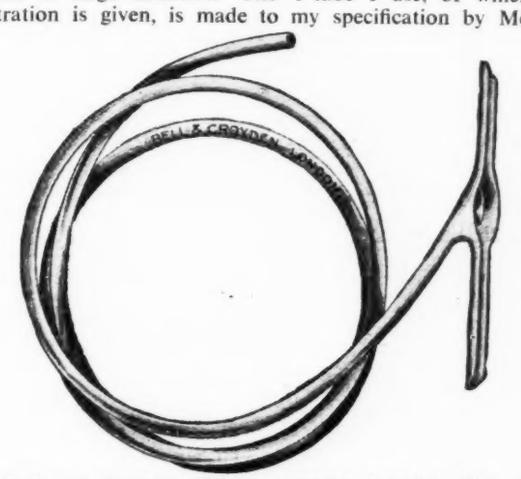
Mr. I. S. SMILLIE, F.R.C.S.Ed. (Orthopaedic Department, Royal Infirmary, Edinburgh), writes:

The recent controversy on the operative treatment of hallux vagus and hallux rigidus prompts me to describe an instrument which will be found of service to exponents of removal of either the head of the metatarsal or the base of the phalanx. Most surgeons will confess to a certain difficulty in the control of either fragment after division of the shaft before the separation of the remaining capsular and ligamentous attachments. This forceps, which consists of a "lion-tooth" grip set at an angle of 110° to the handles, provides adequate control of either fragment. The lion grip is so arranged that the proximal teeth are set closer together than the distal teeth, thus conforming to the tapering of the base of a phalanx or head of a metatarsal. Other uses will be found for it in minor orthopaedic operations on the hand and foot. The instrument was made for me by Messrs. Archibald Young and Son, Ltd., 57, Forrest Road, Edinburgh.

NEW T-TUBE FOR DRAINAGE OF BILIARY DUCTS

Mr. RODNEY MAINGOT, F.R.C.S. (London, W.1), writes:

There are several types of T-tube for draining the common duct, most being modifications of Kehr's pattern. During the last few years the indications for exploration and drainage of the biliary ducts have been greatly extended, and this is now rarely omitted in operations for cholelithiasis, as soft pigment stones, collections of biliary sand, inspissated pus, and inflammatory debris cannot always be palpated, even when present in large amounts. The T-tube I use, of which an illustration is given, is made to my specification by Messrs.



John Bell and Croyden, Wigmore Street, London, W.1. The tube is No. 7 English catheter gauge, and is twenty-five inches in length. The transverse trough-shaped piece is two inches long, and is fitted obliquely to the tube. The soft rubber trough is easily inserted into the incision in the common duct, being securely fixed into position by stitching over it the edges of the incision in the duct by means of a few interrupted catgut sutures. The long limb of the tube is led through the abdominal wound or through a special stab wound, and is anchored to the skin margin to prevent it from being inadvertently withdrawn. By means of a glass connexion which is attached to another length of rubber tubing the bile is made to drain through into a small medicine bottle fixed to the patient's side or to the bed. Some of the bile thus collected is returned per rectum two or three times a day. I find this tube very easy to insert into the common duct, and, what is more, it is easily removed after it has done its work. Provided there is no obstruction in the lower reaches of the duct there is no discharge of bile through the wound after the tube has been withdrawn.

SUPPLEMENTARY FOOD PREPARATIONS

We have received from Cow & Gate Ltd., Guildford, the following preparations intended chiefly for supplementary feeding of pregnant women and of infants.

Prenatalac is a milk food for ante-natal cases designed to meet the heavy demands made during the later stages of pregnancy on the maternal reserves of fat-soluble vitamins and of iron. This is a dried preparation of full-cream milk fortified by the addition, per pint of reconstituted food, of 250 international units of vitamin D, 2,000 international units of vitamin A, and 10½ grains of iron salts. Clinical tests have shown that it is well tolerated by expectant mothers, and is free from any constipatory effects.

Glucose A.D. is a preparation of glucose which contains 2 per cent. of calcium glycerophosphate, together with 6,000 international units of vitamin A and 2,000 units of vitamin D per pound. The makers point out that an increase in sugar consumption usually involves a decrease in fat consumption, and that the presence of the fat-soluble vitamins and calcium in their preparation provides a means of giving additional sugar without disturbing the vitamin and calcium balance of the diet. The preparation is particularly recommended for the treatment of acidosis, and also for a variety of conditions where it is desirable to provide increased sugar intake without reducing the vitamin intake—for example, pre-natal dietary, lactation, infant feeding, and convalescence.

Cerex C.G. is a malted wheat food in which a considerable proportion of the starch has been converted to dextrins, malto-dextrins, and maltose. The preparation is intended for use during weaning. It contains enough unaltered starch for the exercise of normal amylolytic actions, but the presence of partly digested starch renders easier the transition from milk to starch-containing foods.

INVESTIGATION OF MATERNAL MORTALITY

THE MINISTRY'S REPORTS

The Ministry of Health published last week as a White Paper[1] the long-expected report of the special inquiry into maternal mortality in England which has been carried out by medical officers of the Ministry, with Sir Comyns Berkeley's assistance in a consultative capacity, during the past two years. The areas investigated were those of forty-five authorities in which maternal mortality has been more than 5 per 1,000 live births during 1924–33, and twelve other areas with maternal death rates above the national average of 4; and also twelve areas in which they were below this average. In the course of the survey 770 deaths were inquired into. The investigators find that there are many factors in this problem which cannot be dissociated and separately assessed—there is, for example, no necessary relation between maternal mortality and housing conditions.

Local authorities, the report says, should secure proper team work between health visitors, midwives, and doctors—whether in general practice, attached to hospitals or clinics, or specialists—and the Minister, Sir Kingsley Wood, is making suggestions to them for this purpose. Under the Act passed last year every mother should be able after July 1 next to have a properly qualified midwife for her confinement, and the following points are stressed. Every doctor who does midwifery cases under a local authority's scheme should be interested, experienced, and actively engaged in such work, have enough time for unhurried work, and be ready to co-operate with the local authority's own officers and others concerned in maternal welfare. Every local scheme ought to provide specialist consultants, and their services should be fully used. Lives should not be risked by taking patients to hospital when they are too ill to be moved, and the Minister is urging local authorities to arrange for "flying squads" of skilled hospital staff to be brought to the patient in such cases.

A section of the report is devoted to abortion. Attempted abortions appear to be frequent and to be increasing, and to be responsible for a number of deaths from puerperal sepsis. Mr. Norman Birkett, K.C., will act as chairman of a Departmental Committee to be set up at once to inquire into the prevalence of abortion and the legal position in relation to it, and to see what can be done to reduce mortality from this cause.

Sir Kingsley Wood has recently called upon all maternity and child welfare authorities to overhaul their present arrangements so as to secure enough milk or other suitable food for women throughout pregnancy. The report suggests the need of further research into the possible influence of diet on child-bearing, and the Minister is in touch with the Medical Research Council on this subject. The mother herself, it is insisted, should take full advantage of the facilities everywhere available for antenatal and post-natal care. Local authorities should encourage this by arranging talks and lectures, besides personal advice from doctors, midwives, and health visitors. Mother and infant will be the subject of one of the main divisions of the national campaign this autumn to give wider publicity to the health services and thus encourage their fuller use.

Corresponding steps are being taken as regards Wales, which is the subject of a separate report.[2] Summaries of the English and the Welsh reports are given below.

[1] Cmd. 5422. H.M. Stationery Office. (5s. 6d.)
[2] Cmd. 5423. H.M. Stationery Office. (2s. 6d.)

In his prefatory letter Sir Arthur MacNalty acknowledges the help given to the Ministry's medical officers in conducting their arduous local inquiries; in particular, he thanks representatives of local authorities, medical officers of health and members of the staffs of the public health departments, representatives of the local Branches of the British Medical Association, consultant obstetricians, and the staffs of maternity departments and hospitals, general practitioners, midwives, and representatives of voluntary agencies.

THE ENGLISH REPORT

The inquiry was instituted to try to find out why the puerperal death rate in this country has not fallen and why it has tended to remain persistently high in certain regions notwithstanding the increased interest taken in maternal welfare, the great extension of the maternity services, and the remarkable improvement in the general health of the community. The trend of the puerperal death rate in England and Wales has indeed been slightly upward from 1924 to 1934. In 1935, for the first time since 1931, the rate showed a slight decrease, and the provisional figure for 1936 shows a further decline.

The present investigation included visits to the areas of sixty-nine local authorities in England and statistical studies carried out in the Central Department. The field investigation was undertaken by six medical officers of the Ministry, three of whom had special knowledge of maternity services and three had knowledge of health work in general. The services of Sir Comyns Berkeley were secured to assist with his counsel and advice during the investigation and in the preparation of a report.

After the visits of the Ministry's medical officers official letters were sent by the Department to each authority containing suggestions for any improvement or extension of the services which were thought to be necessary. The response has on the whole been most gratifying, and there is every reason to believe that substantial improvement in the scope and efficiency of the services in many of the areas has already taken place or is in process of being effected.

Factors Bearing on Mortality

For many years the regional distribution of puerperal mortality has been higher in Wales and the North-West of England than in the country as a whole. This regional inequality is, however, not confined to maternal mortality rates; with certain exceptions the distribution of the general death rates, infant mortality, tuberculosis, and other rates show some correspondence with the rates from puerperal causes.

Caution is necessary, it is stated, in comparing the puerperal death rates of one area with those of another, because the differences are those of degree only and in certain areas may depend upon relatively small differences in the number of maternal deaths. One death more or less occurring in the year under review may cause a marked rise or fall in the puerperal death rate of an area if the annual number of births is small.

Apart from the more specific causes of death, other factors which might possibly have an influence on puerperal mortality were considered, such as social environment and economic circumstances, occupation, housing and overcrowding, diet and nutrition, age and parity, epidemiological associations, and the climatic conditions prevalent in the districts. With regard to housing and economic conditions the available evidence on the effects of bad housing and overcrowding on puerperal mortality shows that districts in which there are areas with bad housing and overcrowding are just as likely to have low rates of puerperal mortality as those in which the housing is good and the overcrowding less. In the districts visited it was not generally found that the puerperal death rates were higher in the areas with most overcrowding.

Economic conditions, judged by the extent of unemployment, indicated that the observed variations in the puerperal mortality do not show any consistent association with corresponding variations in economic conditions. Many of the districts with high average puerperal death rates have an unfortunate social history, and it appears probable that the living and working conditions had a prejudicial effect on the physique of the people which may not yet have been entirely eradicated. On the other hand, the rural areas in the North, which have tended to have higher rates than the average, show no such distinctive features. It appears to be the collective influence of many factors which predisposes towards puerperal mortality, and the effects of individual factors cannot be dissociated and separately assessed.

Nutrition of Pregnant Women

Assessment of the nutritional state of pregnant women was beyond the scope of the investigation, but the views of competent persons acquainted with local conditions were obtained by the investigating officers. In the exacting conditions peculiar to childbearing it is important to maintain the general health and powers of resistance of the mother. As adequate amounts of suitable food are essential for the metabolic functions of the mother and also for proper development of the foetus, the dietary of the pregnant woman is a matter for serious consideration. It appears that malnutrition of pregnant women due to an insufficient quantity of food is rare in the areas visited. Machinery of one kind or another is available throughout the country to supplement the dietary of expectant and nursing mothers medically certified to require it. Failure to obtain the additional nourishment by those who require it may be due either to faulty administration or to hesitation on the part of the women themselves to apply for this form of assistance. There is no doubt, however, that unbalanced diets are common and that the dietary of many expectant mothers is inconsistent with that now recommended by physiologists as desirable for pregnant women. The influence of the nature of the dietary and of nutrition on maternal mortality cannot, it is observed, be accurately assessed in the present state of knowledge.

Data relating to the age and parity of childbearing women were collected during the course of the investigation and also by Dr. Percy Stocks of the General Register Office, and from a study of these the risk of death is shown to increase steadily with advancing age. The risk at the first is apparently greater than in succeeding confinements until the eighth, and the third confinement appears to carry the least risk.

The national figures show a close correspondence over long periods between puerperal sepsis and other septic infections of similar origin, such as scarlet fever and erysipelas, but closer study in the areas investigated seemed to indicate that the association has no causal significance.

Possible Climatic Influences

The geographical distribution of the incidence of puerperal mortality in England—namely, the tendency for the death rates to be higher in the north and west and lower in the south and east of the country—suggested that climatic conditions might in part exert an influence. There may be an association between climatic factors, such as sunshine, temperature, and humidity, and the incidence of puerperal mortality. Thus there is some indication that abundant sunshine tends to be associated with a low rate of puerperal mortality, but the data required to demonstrate the association are not complete.

Deaths from puerperal sepsis tend to occur most frequently in the coldest quarter of the year, that being the quarter which immediately succeeds the wettest and most sunless quarter, while deaths from toxaemia tend to occur in the warmest quarter, that being the one which immediately succeeds the driest and sunniest quarter and precedes the quarter in which the rainfall is highest. In the present state of knowledge it is impossible to assess the significance of this association.

Artificial Abortion

In each area visited endeavour was made to obtain information regarding the prevalence of abortion. The circumstances associated with the deaths due to abortion which occurred during 1934 were also investigated, and are clinically analysed. The figures obtained from the Registrar-General's Department also formed the subject of statistical studies.

Although it was not found practicable to estimate the effects on health resulting either from abortion or from attempts to induce abortion, frequent assertions were made by persons interviewed that women became debilitated or anaemic, or were in general ill-health, as a result of the repeated and prolonged use of aperients and other drugs taken with the object of terminating pregnancy. Quotations from recent literature cited in the report indicate that the effects of artificially induced abortion may be far-reaching. From the information obtained it seems evident that the practice of artificially induced abortion is frequent, appears to be increasing, is more prevalent in some districts than in others, and is not restricted to any one social class.

Abortion (whether spontaneous or artificially induced) is an important factor in the puerperal death rate of the country, since approximately 14 per cent. of all puerperal deaths are due to this cause (excluding deaths from abortion classed as criminal). The puerperal mortality rate includes deaths due to abortion, and the puerperal mortality rates of England and Wales, which during the years 1933, 1934, and 1935 were 4.51, 4.6, and 4.1 respectively, would have been reduced to 3.86, 3.94, and 3.51 if the deaths due to abortion had been excluded.

The risk attending artificially induced abortion does not, it is found, appear to be sufficiently realized, and there is urgent need for the education of women respecting the damage to health and the danger to life from attempts to terminate pregnancy artificially. The facilities available in some areas for the in-patient treatment of cases of abortion under expert supervision are inadequate.

Local Study of Maternal Deaths

Local investigation of all maternal deaths which occurred during 1934 in the areas visited was undertaken, and these amounted to over one-quarter of the total puerperal deaths in England during that year. An endeavour was made to discover whether any fresh light could be thrown on the problem of maternal mortality by intensive local study of the conditions associated with the deaths, and to ascertain if any circumstances peculiar to the district in which the women died might have contributed to the fatal issue. Consideration was given to the possible influence of environment, attention was directed to the conduct of each phase of childbearing, the local facilities available for professional assistance and for in-patient treatment were assessed, and the conclusions arrived at are based on the evidence so obtained.

The main findings of the present investigators do not differ from those of the Departmental Committee on Maternal Mortality or from those of the officers responsible for the report of the Department of Health for Scotland issued in 1935. They indicate that in many instances ignorance or lack of co-operation on the part of the patient or her relatives prejudiced her chance of recovery; and they illustrate afresh, it is said, that there is need for more systematic and careful medical supervision during the ante-natal period, more skilful management of some confinements, more frequent reference of cases of doubt or difficulty for the advice and treatment of an expert obstetrician, and earlier admission to hospital of many patients.

Local Maternity Services

The report gives an outline of an efficient maternity service of a local authority and includes subjects recommended for consideration, in order to render the services more fully effective. A comprehensive survey of the services was undertaken in every area visited, and attention is drawn to the directions in which they fell short of the standard of efficiency outlined. The maternity services provided by local authorities have, it is stated, been greatly extended and improved during recent years. Immediate results must not be looked for; time is necessary before new or extended provisions can exert their full measure of usefulness. Attention must not be focused only on the women who die; regard must be had to those whose lives are saved. It should be borne in mind that the services provided by a local authority do not operate alone but in conjunction with those of voluntary organizations, independent agencies, and private professional attendants. There are also other factors—such as abortion—which may influence the puerperal death rate. Criticism is sometimes made of the disappointing results achieved by ante-natal supervision, but allowance is not always made, the report points out, for the fact that general recognition of the value of such supervision is of relatively recent date. The underlying principles of ante-natal care are sound, but optimal results cannot be expected until ante-natal supervision attains a high general standard of efficiency and expectant mothers make full and intelligent use of the facilities provided to safeguard their health. The development of consultative ante-natal clinic sessions, under the clinical supervision of an expert obstetrician, to serve every area is of importance in order to render ante-natal services more efficient.

Changing Midwifery

The position as regards midwifery has undergone profound changes in recent years. Apart from the diminution in the number of births due to the fall in the birth rate there has been a decrease in the number of domiciliary confinements conducted by general practitioners and an increase in those for which midwives are responsible. There has also been a rapid and increasing development of institutional midwifery in many districts. The foundation of a sound midwives' service has been laid by the Midwives Act, 1936, which provides for the establishment of an adequate service of salaried midwives in the area of each local supervising authority for attendance on women in their own homes, either as midwives or maternity nurses. This is a legislative measure of great potential value, as opportunity now offers to secure well-trained midwives and to maintain their work at a high standard of efficiency. The importance of sympathetic and skilful supervision of midwives is emphasized. Under the new Act the Minister of Health is empowered to make regulations prescribing the qualifications of persons appointed by an authority to exercise supervision over midwives practising within its area, and no person is to be appointed in future whose qualifications are not in accordance with the regulations.

The General Practitioner's Task

It was evident during the investigation, the report says, that many medical practitioners undertake a considerable amount of obstetric work with competence and skill. The midwifery practice of some doctors has, however, decreased, and the position in some towns is that, unless a general practitioner has a special interest in midwifery or is of repute for his obstetric skill, his maternity practice may be largely restricted to a few medical aid calls from midwives in the course of a year. The general practitioner is often called to an emergency in the patient's home and may have to cope, without adequate assistance and in unfavourable surroundings, with critical situations which would challenge the skill of an obstetric specialist. Other calls upon his time may be pressing. Moreover, the condition of the patient may be such as to compel him to take immediate action, however disadvantageous the circumstances may be. The histories of many of the maternal deaths investigated indicated that, notwithstanding these handicaps, careful obstetric procedures were adopted, but others show that the woman's chance of recovery would often have been enhanced had a practitioner experienced in midwifery been in attendance, had the doctor been assisted by an obstetric expert, or had the patient been admitted to hospital sufficiently early.

A midwife is required by the rules of the Central Midwives Board to call in a medical practitioner in all cases of illness of the patient or of the child, or of any abnormality occurring during pregnancy, labour, or lying-in. She is required when possible to call in the doctor desired by the patient or by the responsible representative of the family, and, although under the Midwives Act, 1918, local supervising authorities are required to pay the fees of all doctors so called in, they have no voice in the selection. A doctor whose practice of midwifery is restricted to only a few cases each year cannot be expected to assist the midwife in difficulties which may urgently call for judgement and experience which, in the circumstances, he cannot be expected to possess. It is suggested in the report that the local supervising authority, in consultation with the local medical profession, should in future be empowered to take steps to ensure that the best local obstetric skill is made available in all cases in which midwives are required under the rules of the Central Midwives Board to call in a doctor.

Hospital Provision

Although extensions have taken place in the provision of hospital facilities for maternity patients, in some districts the demand for beds has exceeded the number available. Much of the accommodation in the hospitals visited was not designed for the purpose, and in a number of districts complicated maternity cases had to be admitted in emergency to general hospitals, in some of which obstetric practice was not regarded as within the scope of their normal activities and the services of obstetric specialists were not always available. Properly constructed, adequately equipped, and suitably staffed maternity accommodation, including a sufficient number of beds allocated to and reserved for ante-natal patients, should be provided to meet the needs of every area.

It is recognized that the treatment of puerperal sepsis patients in hospital is almost always desirable, and satisfactory arrangements should be made for their accommodation. The treatment of these patients should be carried out under the direction of an expert obstetrician.

Need for Post-natal Care

A considerable proportion of the gynaecological conditions from which women suffer are attributable, the report states, to the effects of childbearing. Specialist advice and facilities for in-patient treatment should be available, and instruction and education of the mothers in the importance of submitting themselves for medical examination after confinement should form part of every post-natal scheme. There is need for the fuller development of post-natal services throughout the country, as it is clear that the value of post-natal care is not yet sufficiently appreciated. The existence of such facilities should be made widely known.

Many authorities have provided a full range of auxiliary services, but that of others was lacking in some particulars. Arrangements for the provision of extra nourishment were in some cases not sufficiently comprehensive. Some dental schemes were incomplete, and the value of the services of home helps for women who are incapacitated during childbearing was not always sufficiently realized.

Consultant Facilities

Stress is laid on the importance of the provision of a service of obstetric consultants, and attention is drawn to the infrequency with which the consultant facilities were

utilized in some areas in which they had been provided. The duties of a consultant, under the administrative supervision of the medical officer of health, should, wherever practicable, include the rendering of assistance to general practitioners in domiciliary cases of doubt or difficulty during pregnancy, at the time of confinement, or in the puerperium. The specialist should attend consultative ante-natal clinics not only to advise on appropriate methods of treatment, but to take steps to ensure, as far as circumstances permit, that patients for whom hospital treatment is indicated, whether during pregnancy or at the time of confinement, may be admitted to the maternity unit under his charge. He should be placed in clinical charge of the maternity department for the area and of the puerperal sepsis unit, and should attend post-natal consultative clinic sessions.

The practice of medicine comprises many branches, each of which is tending to become more specialized, but this development, the report states, has been slower in the obstetrical than in the other departments of medicine and surgery. It should be realized, both by the public and by the medical profession, that reference of cases in which there is doubt or difficulty for expert advice and treatment is not a sign of failure or incompetence on the part of the medical attendant. Women who develop serious illness during pregnancy or in whom some abnormal condition is detected which is likely to complicate delivery should be referred early for the opinion of an expert and, where necessary, be admitted to hospital in time for skilled treatment to be effective.

Emergency Units

Among the deaths investigated attention was directed to the number of instances in which women were admitted to hospital in a moribund or in an exsanguinated condition. In cases of grave emergency, such as haemorrhage, shock, or eclampsia, the services of members of the skilled staff of a maternity department should be brought to the patient instead of subjecting her to the risk of transport to hospital. The provision of so-called emergency units of "flying squads" in connexion with a maternity department, under the direction of an expert obstetrician, should effect a reduction in maternal mortality.

Interchange of Information

Attention is directed to the importance of adequate record keeping and to the need for interchange of information between all those concerned. Full and careful records would afford valuable information respecting the local incidence of normal childbearing, slight deviations from the normal, and serious abnormalities. If these records were tabulated on a uniform basis it would assist those responsible for a maternity scheme to assess its efficiency and to detect defects of administration, practice, or co-ordination, and would afford a means of comparison of the different services and of the varying incidence of morbidity throughout the country. Reference is made to the inadequacy of available information regarding maternal morbidity. In any endeavour to ascertain why the puerperal mortality rates in some areas are higher than those in others the incidence of the illnesses of pregnancy and the complications of childbirth would be a more reliable guide than the certified causes of death.

Team Work Essential

It is essential to the success of a maternity scheme, the report continues, that there should be co-operation between all those concerned, and although this was a satisfactory feature in a few of the areas visited in others its importance had not been recognized. The services which were closely co-ordinated, with maternity units staffed by resident obstetric officers working under the supervision of consultants and in association with consultative ante-natal and post-natal clinics, and where co-operation between the workers had been secured, were those in which the best results appeared to have been attained. The time for independent individual effort is past. All persons engaged in any branch of a maternity service should consider themselves to be members of a team working towards the goal of safer motherhood. In this way and this way alone can effective continuity of supervision and treatment be secured.

The number of maternal deaths is small compared with that from many other causes of death and does not amount to 8 per cent. of the total deaths for all causes among women of childbearing age. The puerperal mortality rate is not a true indication of the risk of motherhood; it overstates the hazard to life. It is calculated on the number of births, yet it includes deaths due to abortion and those which occur prior to the birth of a child. There are many factors which influence maternal mortality, the effects of which cannot be separately assessed. Maternal deaths occur which in the present stage of knowledge cannot be averted. In some cases lack of co-operation on the part of the women themselves influenced the issue.

When due allowance is made for these factors the report regards it as certain that the maternal mortality rate of this country is capable of reduction, and that of the factors known to influence this rate the most important from the point of view of remedial action is the standard of midwifery practice.

Main Recommendations

The recommendations made by the Departmental Committee on Maternal Mortality in respect of the training of medical students have been implemented; the maternity services of local authorities have undergone and are undergoing substantial developments; the provision of a service of salaried midwives throughout the country has become a statutory obligation as a result of the passing of the Midwives Act, 1936; but the role of the general practitioner in midwifery has not yet received the attention it deserves. Hence the outstanding recommendations contained in this report are those designed to improve the standard of obstetrics—namely:

1. The establishment in each area under the direction of the medical officer of health of an adequate service of obstetric consultants to undertake the duties to which reference has already been made.

2. The provision of emergency units whereby the members of the staffs of the maternity departments will be available for the domiciliary treatment of maternity patients whose condition is too grave to justify removal to hospital.

3. Arrangements by which the local supervising authority, in consultation with the local medical profession, shall in future be empowered to take steps to ensure that the best local obstetric skill is made available in all cases in which midwives are required to call in a doctor under the rules of the Central Midwives Board.

4. The provision of properly constructed, adequately equipped, and suitably staffed maternity accommodation, including a sufficient number of beds allocated to and reserved for ante-natal patients to meet the needs of every area.

The other recommendations deal with the provision of ante-natal clinics, including consultative sessions, home help schemes, and fuller domiciliary visiting of expectant mothers. The development of post-natal services, education of women and of the public in the need for co-operation with those responsible for maternal welfare, and arrangements to ensure that expectant and nursing mothers in need of extra nourishment shall receive it, are also included.

Special subjects requiring further study are suggested, such as research with a view to the discovery of a reliable prophylactic treatment for puerperal sepsis; abortion, with special reference to the influence it may exert on maternal mortality and morbidity and future childbearing; and further research into the possible influence of the dietary upon childbearing.

THE WELSH REPORT

The causes of high maternal mortality in Wales have been the subject of close investigations by medical officers of the Welsh Board of Health. For the purpose of the inquiry every part of Wales was visited, and recognition is made in the Welsh report of the help given by the local authorities, doctors, nursing associations, and others. The statistics of maternal mortality for the ten years 1924–33 are examined in detail.

In several ways Wales presents an interesting field for comparative social study. Industrially, in economic circumstances, and in the geographical distribution of population, two extremes in type of area exist. In the South Wales coalfield highly industrialized conditions predominate, and the large seaport towns are also commercial centres, engaged in considerable foreign trade. Most of the rest of Wales is rural in character and sparsely populated, and conditions have not greatly changed in the last generation.

Industrial and Rural Areas

While in rural Wales the women marry at later ages, the number of births per married woman is higher in rural than in industrial areas at all childbearing ages. The illegitimate birth rate is roughly twice as high in the rural as in the industrial parts. Both in industrial and in rural Wales the risk of maternal death, stillbirth, and the death of young infants increases with the age of the mother, and is higher for first pregnancies than for succeeding childbirths, but the variations in all cases are shown to be less in rural than in urban areas.

Procured abortion, the report states, is believed to be common in South Wales and to have increased in recent years, but is infrequent in the rural districts. The mortality from puerperal sepsis also is lower in rural Wales. Otherwise no important variations are exhibited in the maternal death rates for the different classes of district. In all parts of Wales, in industrial and rural areas alike, the death rate is comparatively high. It has decreased in the county boroughs, but an increase has occurred in almost every other industrial area.

The Problem in Perspective

While, relative to England, the maternal death rate is high in Wales, the report points out that the number of deaths each year due to childbearing is small in comparison with the number of deaths of a more or less preventable nature from other groups of causes. A mortality rate of 5 per 1,000 births has its opposite in the fact that in 995 cases out of every 1,000 the woman survives pregnancy. The causes for concern are that deaths of a preventable nature occur.

General Ill-health

There is reason to believe that ill-health and disability among many women in Wales accounts in some measure for the high death rate among mothers in childbirth. It is of special significance that maternal mortality is highest in those regions of England which show high death rates from all other causes among women of childbearing age and lowest in those regions where the general death rate is lowest. Both the maternal death rate and the death rate from all other causes are higher in Wales than in any English region.

The investigators state that a good deal of the ill-health among mothers is due to ignorance, carelessness, and neglect, and that the remedy for this state of affairs lies largely in their own hands, helped by the sympathetic work of health authorities. Emphasis is laid upon this point, as care and attention by the woman herself during pregnancy is considered possibly as important in reducing the high maternal mortality rate as is the provision of extensive maternity services. Co-operation of the mother with her attendants and advisers at all stages in all measures which will help to a safe delivery is most desirable. Careful attention to personal hygiene and a readiness to put herself under medical supervision and treatment will prevent the occurrence of many difficulties which may prejudice the chances of successful childbirth.

Measures to Reduce Maternal Mortality

In measures to reduce the loss of life from childbirth, much of which could be prevented if proper measures were taken, all parties concerned—the mother, the doctor, the nurse, the local authorities, and the State—have their respective functions. First there must be a recognition of the importance of sound general health. Childbirth is normally a safe and natural event, and women should be encouraged to look upon childbearing in that light. The right attitude of mind, however, comes more easily when the woman is healthy and realizes her responsibilities, and the home surroundings are good. Ante-natal attention should be wisely directed, and the confinement should be in trained hands. Adequate ante-natal care is needed, for the more appropriate the attention during pregnancy the less likely will there be unfavourable results at childbirth.

Parliament, it is observed, has given to the local authorities wide powers in regard to public health, and there has been growing acceptance of the importance of maternity in the development of the health services. The efficiency of the provision made for maternity must depend largely on local initiative and supervision, and the intelligent use by the woman of the services available. The services should be well thought out and widely utilized; schemes framed and administered at great cost can yet be wasteful in result.

Public opinion is fully alive to the gravity of the problem, but there is not always a true appreciation of the real nature and extent of the problem or of the difficulties. Many deaths occur from other causes than pregnancy or childbirth which in the present state of knowledge can be classed as avoidable. It may confidently be hoped, the investigators state, that with a wider recognition of the principles of preventive medicine in maternal welfare work there will come a progressive reduction in maternal mortality and morbidity and a greater saving of child life.

Maternity Services of Local Authorities

Recommendations are made for improving the standard of the maternity services. At present the services provided by most of the local authorities are inadequate, and outside industrial South Wales and Flintshire very little maternity work is undertaken either during the ante-natal period or at the confinement. The report recommends that every local authority should organize and provide an efficient and complete maternity service which should be available to every mother. The essentials of a good service are considered to be:

(i) A sufficient supply of competent midwives.

(ii) Skilled medical attention which should reach every mother during pregnancy, labour, and the puerperium.

(iii) The provision of hospital beds for those women requiring them either on account of abnormality at any stage or because of unsuitable home conditions.

Under the scheme as outlined the general health of the mother, her education in motherhood, the problem of help in the home, the provision of extra nourishment, and all affairs relating to the pregnancy would be under the supervision of one or other branch of the authority's maternity service. The arrangements in rural areas would necessarily be different from those in populous areas.

The Minister of Health is immediately, in conjunction with the Welsh Board of Health, urging upon all authorities in Wales that they should consider the essential requirements of a complete scheme of maternity services, including ante-natal and post-natal supervision, and should pay special attention to securing proper team work, the provision of additional maternity accommodation, of obstetric consultants, of emergency units for bringing skilled services to the patient, and the organization of general educational teaching.

BRITISH MEDICAL JOURNAL
LONDON
SATURDAY MAY 8 1937

MATERNITY SERVICES

Valuable as it is in many important respects, the report on an investigation into maternal mortality issued last week by the Ministry of Health contains both a disappointment and a danger. We print in this issue (p. 972) a summary of the report and its main recommendations, and, in the *Supplement*, a memorandum which has been approved by the Council of the British Medical Association and is to be submitted to the Representative Body in July.

The valuable features of the report are that it places the problem of maternal mortality in England in its proper perspective, that it discusses the general questions arising out of that problem in a careful fashion without exaggeration, and that it emphasizes the difficulty and many-sidedness of the considerations that have to be taken into account, and deprecates the loose employment of statistics and the rhetorical and misleading use of such words as "preventible" and "avoidable" in this connexion. With regard to some of the statements not infrequently made on public platforms it is well for the public to be told or reminded that though the maternal death rate has remained almost stationary of recent years it has fallen enormously when a longer period of time is considered, that the rate in this country compares favourably with that of most other countries, that maternal deaths are relatively few in number, that if the causes of death in women from 15 to 45 years of age are examined it will be found that only 7.7 per cent. were due to pregnancy and labour and 92.3 per cent. to other causes, and that notwithstanding the hazards of childbearing the risk of death during this period as a whole is less for the married than for the single woman. It is owing to this smallness of the numbers of deaths due to maternity that variations in rates may indicate mere chance conditions, and do not necessarily reflect any real variations in the underlying causes.

The disappointment in the report is that it does scarcely anything towards elucidating the problem which was understood to be the main subject of the investigation—namely, the persistence of a high maternal mortality rate over a considerable number of years in certain areas, mainly in Wales and in the North-West of England. It is the persistence rather than the actual degree of such a rate that needs explanation; and it was hoped that if this could be found it might lead to some further steps towards the betterment of the present almost static figure. So far as the English "black areas" were concerned, at any rate, it could scarcely be imagined that in them there was a lower standard of clinical obstetrics than elsewhere, or that administrative arrangements were markedly less satisfactory than in other districts; but it might well have been that, in spheres other than those of clinical practice or of administration, discernible factors were present which would account to some extent for the anomaly. There must be such factors, but they have not been found. It has once more been demonstrated that neither the standards of housing nor the economic circumstances of the household bear any definite relation to the risks of maternity. These risks are often least in unsatisfactory environments and appear to be greater among the well-to-do than among the poor. The investigators did make inquiries into certain social, industrial, and climatic conditions; but beyond the suggestions that employment in textile factories and the prevalence of a rainy climate tend to be accompanied by a high maternal death rate, and that there should be further inquiry as to the possible influence of dietary on childbearing, nothing very useful emerges. In the corresponding and parallel report made by the Welsh Board of Health it appears to be accepted that a relatively low standard of living, an excessive incidence of intercurrent disease, wrong feeding and poor nutrition, a somewhat high degree of ignorance, carelessness, and neglect by the mother, a high illegitimate birth rate in rural Wales, with an increase of procured abortion in the industrial areas, and inadequate administrative action on the part of a number of local authorities, are sufficient to account in large part for the unduly high rate in Wales as a whole. Most of these are, fortunately, remediable defects.

The danger in the report consists in this—that the recommendations made, while some of them are welcome and not one of them is inacceptable in itself as worded, would not only leave the country with a large number of local isolated maternity services working piecemeal and on varying principles instead of a national service in which fundamental features were uniform and universal though locally administered, but would allow of interpretations and methods of implementation which would be detrimental to the medical profession and might be disastrous to the public. Two such points relate to the provision of domiciliary ante-natal supervision in some districts only instead of in all, and to the usage of maternity hospital accommodation and the nature of its

staffing. The major point of principle, however, relates to the method by which steps shall be taken "to ensure that the best local obstetric skill is made available in all cases in which midwives are required to call in a doctor." This is the question to which the memorandum approved by the Council of the British Medical Association is mainly directed, and it requires the most serious attention of every member of the Representative Body, and indeed of every registered medical practitioner. In the last paragraph of that memorandum the Council makes a proposal which would be effective in improving the standard of obstetrical practice in cases in which it may now be deficient, while at the same time conserving the rights and interests of the profession, of the mother, and of the general public, which is largely dependent upon the training and experience of its medical attendants even if they are not included in an established social service. These rights and interests are jeopardized by the alternative method which it is understood the Ministry of Health and the Central Midwives Board now have under consideration. This is that the midwife should be allowed to call to her assistance such practitioners only as are selected by the local authority for this purpose. By the Medical Act, 1886, a registered medical practitioner "shall be entitled to practise medicine, surgery, and midwifery in the United Kingdom"; but if by administrative action on the part of the Ministry of Health and by the alteration of a rule by the Central Midwives Board three-fifths (or in some localities more than nine-tenths) of his field of midwifery practice may be forbidden him, the question arises whether the doctor's statutory right has not been infringed. If it is to be infringed, then this should be done by straightforward legislative action by amending the Medical Act. No doubt the General Medical Council will consider this aspect of the matter, as well as the implied criticism that medical practitioners now being registered after having completed the improved and extended midwifery course prescribed are not competent to deal with the minor emergencies for which the midwife would have to ask their help, and to decide that an obstetric specialist should be called in in others.

The rights and wishes of the mother are at stake. At present she may have the doctor of her choice. In the contemplated circumstances she would, in a large number of cases, be deprived of this, and even forbidden to avail herself of the services of the practitioner whose duty it had been to look after her throughout her pregnancy. The interests of all classes of the public, too, would be affected. A well-trained and experienced medical profession is essential in these interests. The problem of recruiting as well as of establishing the selected lists of permitted doctors would present itself. They are to contain the names only of "experienced" doctors, yet newly qualified practitioners are to be denied the major part of the opportunity open to them for acquiring such experience. It is open to question whether lists compiled by this method, and entailing such consequences, would contain the names of those likely to bring to the service the "best local obstetrical skill." It is to be hoped that the Ministry and Board may, on consideration, prefer such a plan as that proposed by the Council of the British Medical Association as likely to be more effective in practice and less inequitable.

VALVULAR LESIONS IN RHEUMATIC FEVER

In the past there has been no clear-cut agreement on what are the characteristic histological changes in the cardiac valves in rheumatic fever: the chief points at issue were the mode of formation of the vegetations and whether the valves were normally vascularized or not. A recent paper from the laboratories of the Mount Sinai Hospital[1] deals authoritatively with these problems. For many years Louis Gross and his colleagues have been studying the morbid anatomy and histology of the heart in rheumatic fever, and successive papers have appeared on the lesions of the myocardium,[2] blood vessels,[3] conduction system,[4] and pericardium[5]; in each the same techniques have been employed and the pathological changes compared with the normal appearances at varying ages. They state that the normal valve consists of a dense collagenous stroma which is covered on each side by a fibro-elastic layer, loose connective tissue, and endothelial cells; the valve leaflets are attached to the myocardium through the valve ring, which is made up of a gelatinous tissue and a fibrous annulus. The normal valve is markedly acellular, and blood vessels are seldom found save for a few capillaries in the valve ring.

This is in direct contrast to the views on valve vascularization recently expressed by Wearn,[6] but Gross suggests that myocardial vessels were included in the statistics, and that valves with evidence of past inflammation were regarded as normal material. With advancing age the normal valve becomes thicker and more fibrotic, lipoid

[1] *Amer. J. Path.*, 1936, **12**, 855.
[2] Ibid., 1934, **10**, 467, 489.
[3] Ibid., 1935, **11**, 253, 631.
[4] Ibid., 1936, **12**, 31.
[5] Ibid., 1936, **12**, 183.
[6] *Amer. Heart J.*, 1936, **11**, 22.

and calcium deposition may appear, but there is never any evidence of cellularity or vascularization. In acute rheumatism capillarization with infiltration of inflammatory cells of the valve rings occurs as a contiguity process from the inflamed myocardium; this process spreads along the valve leaflets, producing oedema and eosinophilic swelling of the fibrous tissue. Vegetations are found on all valves, but are most pronounced on the mitral and aortic cusps; the tip is not affected, but vegetations appear at the point of closure or where there is a blood eddy or stasis (the frequency of vegetations within the valve pockets is emphasized). It is suggested that the vegetations are formed by an extrusion from the valve leaflet of the swollen fibrous tissue and fusion of the proliferated cells, and that the deposition of platelets or fibrin plays very little part in their formation. In the subacute and chronic stages the valves are invariably vascularized, and there is an increasing fibrosis and distortion with secondary lipoid changes and calcification. New vegetations may be formed, and these occur at the most distal portion of the valve still presenting inflammatory changes; accordingly several distinct rows of vegetations arise as the increasing fibrosis and distortion exposes different portions of the valve to the blood stream. Gross and Friedberg uphold the view that the pressure to which the valve is exposed plays an important part in determining the extent of the valvular deformity, and mention the frequency with which fresh vegetations appear on the tricuspid valve in cases of pulmonary hypertension, even in the absence of fresh lesions on the mitral valve. In cases of apparently inactive rheumatism large thrombotic vegetations which are not due to a bacterial endocarditis may form on the damaged valves; these are regarded as an epiphenomenon, and are usually associated with cachectic states. Although more liable to occur on damaged valves, they may arise on healthy valves, and in some cases have been associated with thrombocytopenic purpura and in others with an unusual form of polyarthritis, prolonged fever, and serous effusions.

The value of such careful descriptive morphology cannot be overestimated, and the work of Gross and his colleagues is in the Virchow tradition. Tracing the changes throughout the heart in rheumatic fever in all its stages, they have shown clearly that the valvular lesions must be regarded as an inflammatory process spreading from the myocardium with secondary vascularization of the valves, and that there is no evidence to suggest that the valves are first vascularized and then involved in the rheumatic process by reason of changes around the vessels within them.

THE NUTRITIVE VALUE OF PASTEURIZED MILK

One of the statements most frequently made by opponents of pasteurization is that the nutritive value of milk is deleteriously affected as the result of treatment by heat. No satisfactory evidence in support of this contention has yet been brought forward. It is true that certain workers have carried out experiments the results of which have been regarded as favouring raw as opposed to pasteurized milk, but careful examination of their protocols has usually revealed some source of error that has rendered their conclusions untrustworthy. On the other hand there have been a number of workers who have failed to find any significant difference between the nutritive value of raw and that of pasteurized milk. With the rapid increase in the extent of pasteurization that is occurring at present, and the growing demand for powers of compulsory pasteurization by towns like Glasgow and Poole, whose experience of raw milk has been unfortunate, it is important that this question should receive a definite answer. Considerable progress towards this end is being made by a group of workers at the National Institute for Research in Dairying at Reading and the Rowett Research Institute at Aberdeen, who are engaged under the auspices of the Milk Nutrition Committee of the Milk Marketing Boards in making careful observations on the comparative nutritive value of raw and pasteurized milk. The first report[1] of this committee, which has just been published, mainly concerns experiments on rats. The results of further investigations—on calves and on school children—are promised for publication in the near future. Observations on the individual constituents of milk showed that, when subjected to commercial pasteurization by the holder method (145°–150° F. for thirty minutes), milk lost about one-fifth of its vitamin C content and a certain but unmeasured amount of its vitamin B complex. No change was observed in the vitamin A or carotene content of the milk, in the biological value of the proteins, or in the availability of the calcium or phosphorus. The change in the vitamin B complex could be detected only when the intake of milk was limited to about 8 c.cm. daily. With regard to the partial destruction of vitamin C, it is pointed out that pasteurization could not be held entirely responsible. The reduced form of ascorbic acid that is secreted by the normal cow is resistant to heat, but is capable of reversible oxidation under the action of light. The oxidized form is susceptible to heat, and it is this form, resulting from exposure of the milk to light after it has left the cow, that is destroyed by pasteurization. Experiments on litter mates, carried out with whole milk given in a quantity of 70–80 c.cm. daily, failed to show any difference between the nutritional value of raw and pasteurized milk as judged by such criteria as gain in weight, body length, or the calcium and phosphorus content of the

[1] *Milk and Nutrition.* Part I: *The Effect of Commercial Pasteurization on the Nutritive Value of Milk, as Determined by Laboratory Experiment.* The National Institute for Research in Dairying (University of Reading) and the Rowett Research Institute, Bucksburn, Aberdeen. Reading: Poynder and Son, 1937. (2s. 6d.)

carcasses. Until the results of the investigations on calves and children are published it would be unwise to draw any general conclusions from the observations just reported. It is of considerable interest, however, that experiments so carefully carried out on rats have failed to afford any support to the contention that pasteurization destroys the nutritive value of cows' milk for these animals.

HUMAN TUBERCULOSIS OF BOVINE ORIGIN

At the October meeting of the Office International d'Hygiène Publique representatives of Great Britain, Germany, and Holland submitted reports[1] on the incidence of human tuberculosis of bovine origin. The report from Germany, prepared by Professor L. Lange, gives a comprehensive survey of the investigations carried out in countries all over the world, and thus contains much information not accessible easily elsewhere. He concludes that there is no form of tuberculosis that may not be caused by the bovine bacillus. The figures of incidence in various countries differ so greatly that international averages calculated from them would have only a limited value. All that can be said is that three groups of countries can be differentiated: (1) those in which the bovine bacillus is relatively insignificant—*e.g.*, Japan, India, and perhaps Norway; (2) those in which there is an "average" amount of human tuberculosis due to this bacillus—among them Germany and Switzerland; and (3) those in which this incidence is very high—England and Scotland. There is little doubt that there is a close connexion between the incidence of the bovine type in human tuberculosis and the amount of tuberculosis in cattle in the same country. Nevertheless, though feeding is the most important factor, it does not, according to Professor Lange, explain entirely why there is so much human tuberculosis of bovine origin in England and Scotland while other countries are almost free from it. Sir Weldon Dalrymple-Champney's report, amplified by a note prepared by the Scottish Board of Health, summarizes the now well-known investigations by Stanley Griffith, W. T. Munro, W. M. Cumming, and J. W. S. Blacklock, and the administrative measures that have so far been taken to reduce the incidence of disease with the bovine bacillus in man. Stress is laid on the 1936 Order in regard to the designations of milk, and to the importance of pasteurization. In the light of Professor Lange's conclusions it appears, however, that if England is not to attain an unenviable position in this connexion more energetic or perhaps different kinds of measures will have to be taken. It is helpful to note that country districts show a much higher incidence than towns; this is particularly striking in Scotland. Finally, the Dutch report contains results of the investigation of the sputum of adults in Amsterdam and South Holland, and of the gastric contents of children under treatment in sanatoria. Work was also carried out to compare the results obtained by different preliminary treatments of the gastric fluid and by culture and inoculation. It appears that for the bovine type the best results are obtained when the gastric contents are treated with soda rather than with acid, and when a Loewenstein medium is used which does not contain glycerin; guinea-pig inoculation, however, is still superior to culture.

[1] *Bull. Off. int. Hyg. publ.*, 1937, **29**, 317.

TREATMENT OF PEPTIC ULCER

Some interesting though hardly encouraging results have been collected recently by Dr. Sandweiss[1] in an attempt to compare the relative efficacy of diet, injections, and surgery in the treatment of peptic ulcer. Among 260 patients treated by alkalis and diet according to the Sippy regime immediate improvement was noted in from 72 to 94 per cent., but relapse occurred within five years in 65 to 85 per cent.; and three-quarters of even the most favourable cases relapsed within a period of ten years. Vaccines, emetine, distilled water, or histidine injections gave almost identical immediate results, but a review at the end of one year showed that the proportion of relapses was higher than in patients treated by diet and alkalis. Rest in bed with alkalis and dietetic therapy gave better five-year results than injection treatment gave at the end of one year. Surgical intervention in a small series of cases was even less successful. Only three patients out of twenty-five operated on for peptic ulcer have remained free from symptoms; the results of a total of seventy operations showed that three patients had died (8.8 per cent.) and that over 90 per cent. had relapses. Taking all methods of treatment together, only five patients out of 155 have remained symptom-free for from five and a half to seven years after the first and only attack of symptoms due to peptic ulcer. Dr. Sandweiss has been unable to corroborate the experimental work of Weiss and Aron, which seemed to show that injections of histidine protected dogs from peptic ulcer following the Mann-Williamson operation. Twelve dogs were subjected to this operation in which the duodenum is diverted into the terminal ileum, and the stomach is anastomosed with the jejunum. Six have died, five of them with ulcer, and the remaining six show clinical signs of ulcer in spite of injections twice daily of 1 c.cm. of histidine, beginning the day before, or within three days of, the operation. Any benefit that histidine confers is therefore, Dr. Sandweiss thinks, not a specific one, but is largely due to the psychological effect of a new method, and practically the same effects follow injections of distilled water. Parenteral therapy in any form he regards as of value only as an additional measure, and one which should be used only in those patients not responding to diet and alkalis, and then in association with, but not in place of, a correct diet. Such reports as these serve further to confirm the need for caution in assessing immediate results in the treatment of peptic ulcer; the importance of continuous attention even in symptom-free periods; and the necessity of avoiding premature conclusions as to the value of any remedial measure for a condition in which remissions and relapses are common. An ordered diet, it is obvious, must form the basis of treating peptic ulcer.

[1] *J. Amer. med. Ass.*, 1937, **108**, 700.

ROYAL SOCIETY CONVERSAZIONE

The conversazione of the Royal Society at Burlington House on May 4 brought forward the usual assembly of scientific exhibits, with a few historical ones which were of special interest. Among these were the royal charters of the society, with the charter-book containing the signatures of the founder, patrons, and Fellows from 1662 to the present day. There were also shown original manuscripts and manuscript letters of early Fellows, including Boyle, Hooke, Leeuwenhoek, Leibnitz, Malpighi, and Newton. Another exhibit consisted of diplomas and other original documents of William Hyde Wollaston, a recent gift to the society from the Wollaston family. Wollaston was a physician of some fame in the provinces and London, but, being beaten in competition for a post at St. George's Hospital, became a truant from medicine and devoted himself to some fruitful research in chemistry and optics. One other link with past times was an unrecorded water-colour portrait of John Dalton; this was shown under the zograscope, a contemporay optical instrument used for domestic entertainment in the eighteenth century. From these excursions into the science of other days the visitor was sharply recalled by other exhibits to the marvels of present invention. A number of exhibits related to investigations on plants, especially on virus infections. Imperial Chemical Industries has been experimenting on plant hormones. Substances have been isolated from plants and shown to possess growth-promoting properties, and some of the striking effects of heteroauxin, as one of the substances is called, on plant tissues were demonstrated. In another field there were cameras for television, microscopes for ultra-violet light, and an instrument for the photographic recording of transient phenomena, such as lightning surges, with which records could be obtained of phenomena lasting only one or two millionths of a second. Professor H. Woollard exhibited *x*-ray films illustrating the lymphatics of the human body after injection with thorotrast and barium. The films showed the longitudinal pattern of the vessels in the extremities and the circular arrangement around the trunk, how the lymphatics above converged on the axilla and those below on the groin. It was also shown how thorotrast, injected into the living body, has been used for the investigation of lymphatic oedema and obstruction, the lymphatic flow in skin transplantation, and tube pedicle grafting. In cancer research the injection of the lymphatics shows that normal lymphatic vessels traverse the cancer mass, that many lymphatics about the cancer remain patent and contain no cancer cells, and that normal lymphatic vessels pass from the cancer to lymph glands which have been found to contain cancer cells. Some of this work with thorotrast is described in the recent annual report of the British Empire Cancer Campaign. Another demonstration was of a subjective photometer by Dr. W. D. Wright. Two patches of light were matched by viewing, one in the right eye and the other in the left. The right eye was then light-adapted and the two patches again compared to determine the loss of sensitivity produced by the light adaptation; a further series of matches could then be made to record the course of the recovery of the, presumably, photochemical reaction in the retina. This instrument has been used to measure the adaptation functions of normal eyes, and it is hoped to extend the measurements to test the effect of various pathological conditions on the adaptation process. An unusually large number of exhibits of biological and zoological interest were on view; among these two may be mentioned, one illustrating the ornateness of Nature and the other her occasional fretfulness. The first was the tails of birds of paradise, bringing out their variations, and the second was an extraordinary collection of spiny mammals—echidnas of the Australian region, and the more familiar hedgehogs and porcupines. Both were from the Natural History Museum. During the evening a short lecture was given by Professor Andrade on events and personalities in the history of the Royal Society and the vicissitudes of its Fellowship in days gone by.

THE CAMPAIGN AGAINST JUVENILE RHEUMATISM

In a recent communication to the Permanent Committee of the Office International D'Hygiène Publique,[1] Professor D. Danielopolu, with two colleagues, provides an interesting survey of the problem of rheumatism and rheumatic heart disease. In any organized campaign against this affliction Danielopolu lays stress upon preventive measures: although, unfortunately, the climate cannot be changed for all potentially rheumatic children, it is important that long periods of convalescence under optimum climatic conditions should be available for those who have had an attack. Improvement of housing conditions is also urged as important. Danielopolu, summing up the evidence on the question of removing the tonsils, is in favour of leaving them alone and of dealing with tonsillar sepsis by local measures. The authors consider that treatment with salicylates, begun early and in big enough doses, constitutes an important measure in preventing heart disease. Once the heart is affected the campaign must be organized along these lines. It is important to look for cardiac lesions among children with few or no symptoms in order that the routine of their lives may be adjusted before harm is done. Advice may also be given as regards marriage, pregnancy, surgical operations, and other possible situations which the patient with rheumatic heart disease may encounter. Financial aid to cardiac patients and to their families is also mentioned; and the authors outline a system of co-operation between the various bodies concerned in the treatment of rheumatism, such as hospitals, clinics, convalescent homes, and public institutions.

We regret to announce the deaths of two distinguished representatives of medicine in the Services: Major-General John Edge, late R.A.M.C., at the age of 89; and Major-General Sir Patrick Hehir, I.M.S. (ret.), at the age of 77.

[1] *Bull. Off. int. Hyg. publ.*, February, 1937, **29**, 83.

ENDOCRINES IN THEORY AND PRACTICE

This article is one of a series on Endocrinology contributed by invitation

HYPERPARATHYROIDISM

BY

DONALD HUNTER, M.D., F.R.C.P.

Until twelve years ago we had no proof of the relationship between parathyroid activity and the metabolism of phosphorus and calcium. The discovery of the parathyroid hormone led at once to studies of its effects in normal individuals. When injections of an active parathyroid extract are given over a long period of time they cause a decrease in the plasma phosphorus, an increase in the serum calcium, and at the same time a mobilization of calcium salts from the skeleton, which are then passed in the urine. This knowledge has led to the discovery of cases of a bone disease associated with hyperfunction of a parathyroid tumour—the generalized osteitis fibrosa of von Recklinghausen.

In 1891, in a Festschrift in honour of Virchow's seventy-first birthday, von Recklinghausen gave the first accurate account of the bone disease which now goes by his name. Although his contribution is involved and he described more than one bone disease, there can be no doubt that his Cases 5 and 7 constitute the discovery of generalized osteitis fibrosa. Thirteen years later Askanazy reported a case associated with a parathyroid tumour, but no special significance seems to have been attached to the association, despite the fact that Erdheim had already noted enlargement of the parathyroid glands in osteomalacia and had suggested that they were functionally related to calcification. When opinion differed on whether the increase in parathyroid secretion was primary or secondary to the bone disease, Erdheim himself defended the view that the skeletal change was primary and that the parathyroids enlarged merely to meet the greater demand for calcium. Acting on this assumption, Mandl in 1925 transplanted four parathyroid bodies into the abdominal wall of a man with generalized osteitis fibrosa. No improvement followed, however, and he accordingly explored the neck, where he found a parathyroid tumour measuring 2.5 by 1.5 by 1.2 cm. This was removed, and the subsequent disappearance of pain in the bones, the reduction of excretion of calcium in the urine, and the general improvement in the patient's health constituted the first clinical evidence that in this disease the parathyroid lesion is primary and the skeletal changes secondary. By this time it was well established that the parathyroid glands are specifically concerned in regulating the metabolism of calcium.

The isolation of an active parathyroid extract which raises the calcium of blood and urine, and the recognition that injection of this extract causes loss of calcium from the bones, were the next important steps in deciding that in generalized osteitis fibrosa the high calcium content of the serum, the increased calcium excretion in the urine, and the diminished density of *x*-ray shadows of the bones, point with certainty to a parathyroid lesion.

Morbid Anatomy

Hyperparathyroidism leads to changes which are generalized throughout the skeleton: the bones are soft and cut with a knife like rotten wood. Both cortex and spongiosa are too thin and are largely replaced by tough, grey, fibrous tissue. Multiple grey, spongy, osseous swellings occur, and sometimes expand the cortex. Firm, round, red tumours and single or multilocular cysts may be present. The great resorption of bone may lead to deformity in any part of the skeleton, and also to spontaneous fractures. Histologically the main changes are lacunar resorption, apposition, fibrosis of marrow, and the formation of osteoclastomata (giant-celled tumours) and cysts. Lacunar resorption is the predominant change. There is a general osteoporosis which varies in degree in different cases. Apposition, however, does not cease, and where present it is usually abnormally active.

The condition found in the parathyroid glands may be a hyperfunctioning adenoma of a single gland or rarely of part of two glands. The greatest diameter of such tumours may be from 0.7 cm. to 7.5 cm. In some cases there is a generalized hyperplasia of all the parathyroid glands, and it is possible that this is a result of an increased secretion of the parathyrotropic hormone of the pituitary gland. Bilateral renal calculi, composed principally of calcium phosphate, are commonly present. In advanced cases areas of metastatic calcification have been found in the lungs, stomach, kidneys, and myocardium.

It is possible by injecting parathyroid extract into puppies in increasing amounts over a long period to produce hyperparathyroidism experimentally. Such injections lead to progressive resorption of bone, fibrous replacement of the marrow, and to the production of other features characteristic of osteitis fibrosa. Prolonged overdosage may give rise to metastatic calcification in the tissues.

Clinical Features

Besides pain and tenderness of the bones, and even spontaneous fractures, hyperparathyroidism gives rise to symptoms and signs outside the skeleton. These include hypotonia and muscular weakness; anorexia, sometimes with nausea, vomiting, and abdominal cramps; polydipsia and polyuria; renal calculi, sometimes with colic and haematuria; and wasting in advanced cases. There is no one symptom which is diagnostic. Because of the insidious onset and the extremely varied symptomatology the disease is often not suspected. Anorexia, nausea, vomiting, lassitude, and hypotonia may all arise early, and are sometimes presenting symptoms. Polyuria and polydipsia are the rule, and may be so marked as to suggest diabetes insipidus. Increased frequency of micturition during the night may be a distressing feature, and occasionally there is enuresis. The large quantity of water necessary for the increased excretion of calcium salts is of course responsible for this group of symptoms.

Hyperparathyroidism is a progressive disease, and if untreated it is usually fatal. It is more than twice as common in women as in men and it occurs at all ages, but most commonly in middle life. The youngest case known is in a boy of 10 and the oldest in a woman of 69. It is possible to describe several different types of hyperparathyroidism, for the clinical features vary according to whether the skeletal, renal, or gastro-intestinal symptoms predominate.

CLASSICAL TYPE WITH FIBROCYSTIC SKELETON

In this type the skeletal symptoms and signs predominate. They consist of pain, bone deformities, generalized decalcification, and sometimes fractures. Though this type may begin with weakness, thirst, and polyuria, most

DOUGLAS S. STEVENSON AND FERGUS L. HENDERSON: OSTEOCHONDRITIS DISSECANS

FIG. 1.—Right elbow-joint; August, 1935.

FIG. 2.—Right elbow-joint; November, 1935.

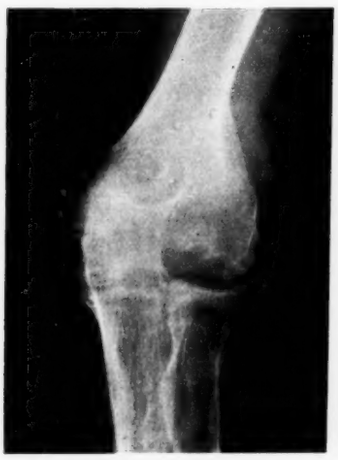


FIG. 3.—Right elbow-joint; April, 1936.

FIG. 4.—Left elbow-joint; August, 1935.

FIG. 5.—Left elbow-joint extended; April, 1936.

FIG. 6.—Left elbow-joint flexed; April, 1936.

FIG. 7.—Areas of decalcification in both ischii; April, 1936.

ALBERT SHARMAN AND H. L. SHEEHAN: ENDOMETRIAL BIOPSY

FIG. 4.—Slide with typical biopsy sections. Five-thirds actual size.

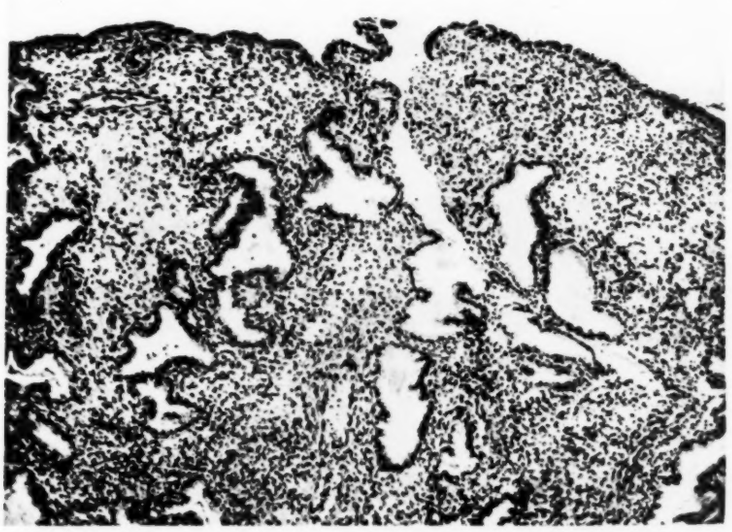


FIG. 5.—Histological appearances of biopsy material. Case of metrorrhagia. (×80.)

FIG. 1.—Case I. Dorothy T. Showing multiple sebaceous cysts on face, those on the forehead being almost hidden by the fringe.

FIG. 2.—Case I. Legs, showing multiple cysts and scars on the right shin, marking the site of previously "inflamed cysts."

FIG. 3.—Case I. Left forearm, showing multiple cys

FIG. 4.—Case III. George T., showing multiple cysts on the face and scalp.

FIG. 5.—Case III. Showing cysts on the forehead and face.

FIG. 6.—Case III. Showing multiple sebaceous c on both legs.

FIG. 7.—Case II. Walter T. Head and front of chest, showing cysts in region of right eyebrow and scar over front of sternum.

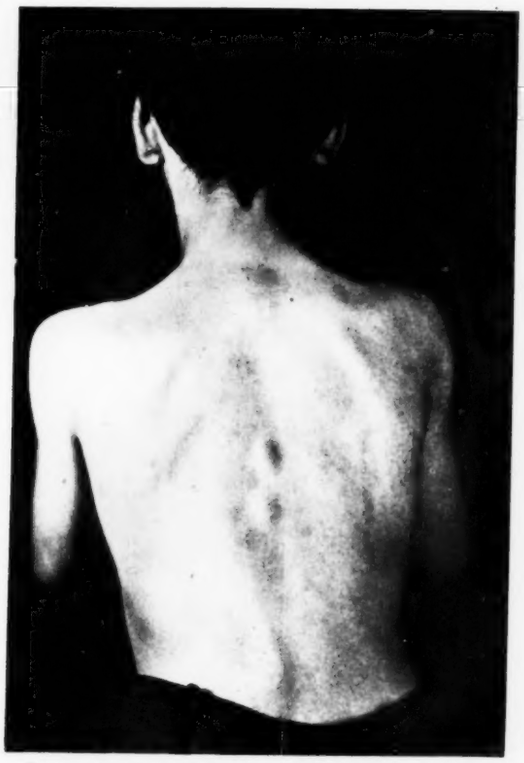


FIG. 8.—Case II. Back of chest, showing two cysts to the left of the mid-line.

FIG. 9.—Case IV. William T., Dorothy's father. Showing multiple sebaceous cysts on forehead and scalp.

FIG. 10.—Case IV. Showing cysts on the face and scalp.

ROBIN PILCHER: "MIXED TUMOUR" OF THE LIP

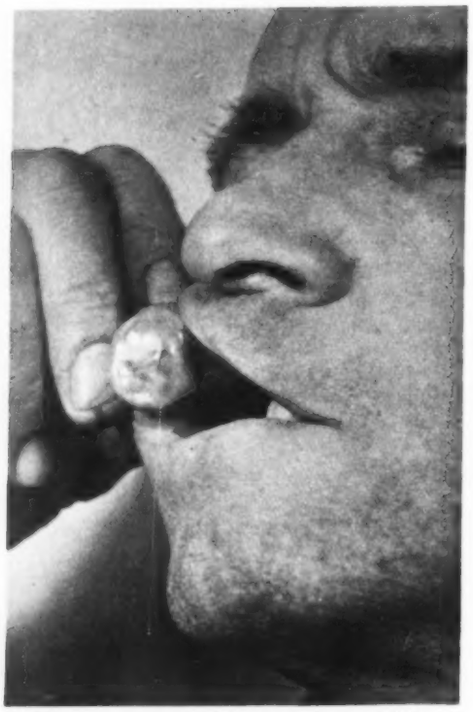


FIG. 1.—Appearance of the tumour on everted lip.

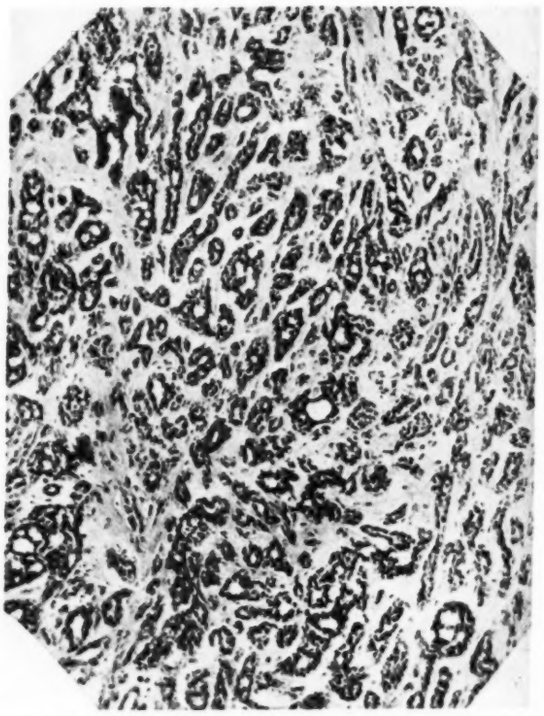


FIG. 2.—General structure of tumour. Haematoxylin-Eosine. (× 80.)

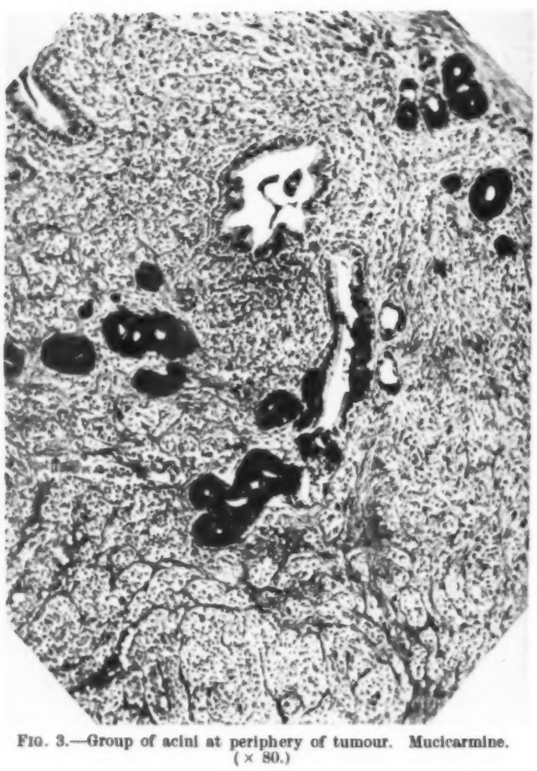
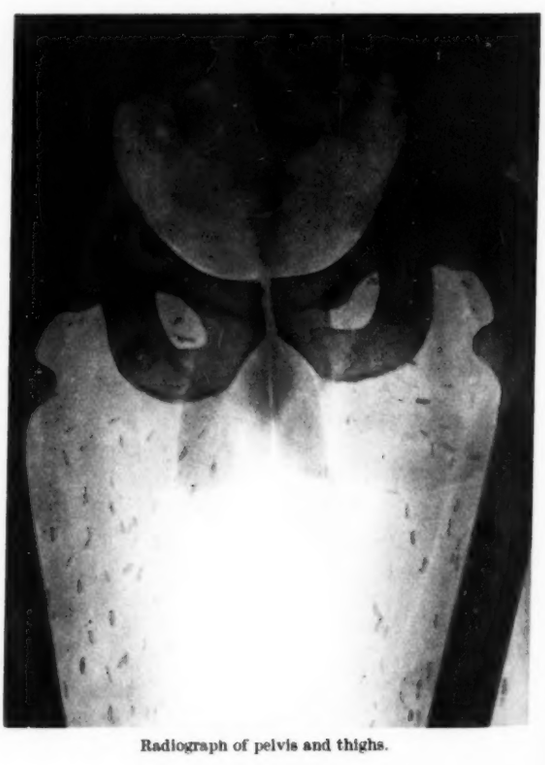


FIG. 3.—Group of acini at periphery of tumour. Mucicarmine. (× 80.)

A. J. P. ALEXANDER: EPILEPSY AND CYSTICERCOSIS



Radiograph of pelvis and thighs.

patients complain early of pains in the bones, particularly in the back, pelvis, and legs. Deformities of the skeleton appear and slowly progress. They are of the type commonly seen in conditions associated with softening of the skeleton. The thoracic cage and pelvis are often grossly deformed, and the spine is shortened owing to narrowing of the vertebral bodies. Kyphosis occurs, with loss of several inches in height. The chest has a deep antero-posterior diameter and distorted ribs, and the abdomen is shortened. The limbs may be irregularly curved and deformed, so that walking becomes at first difficult and then impossible. Occasionally bone tumours or cysts are visible or palpable, especially when they appear in the limbs or jaws. The fingers may show a characteristic deformity, in which the terminal phalanges become shorter and broader than the normal. The appetite fails, there are nausea and vomiting, and the patient becomes extremely weak and may go on to a cachectic state with extreme deformity and helplessness. Treatment at this stage of the disease will not restore the normal function of the skeleton, and it should be our aim to make the diagnosis of hyperparathyroidism before such complications have arisen.

TYPE WITH OSTEOPOROTIC SKELETON

The skeletal changes in this type may be indistinguishable from those of osteomalacia, hyperthyroidism, or senile osteoporosis. In all such cases studies of the blood chemistry and the calcium balance are essential.

TYPE WITH RENAL CALCULI

The presenting symptom in this type may be renal colic or haematuria. Skeletal changes may be absent, minimal, or severe. In all patients with renal calculi, especially where they are bilateral, the serum calcium and plasma phosphorus should be estimated in order to rule out hyperparathyroidism.

TYPE WITH METASTATIC CALCIFICATION OF THE KIDNEYS

In this type calcium phosphate is deposited in the substance of the kidney, and can be demonstrated in radiographs. Chronic nephritis occurs, and as it progresses the plasma phosphorus may rise and the increased excretion of calcium salts may be diverted from the urine to the faeces. Patients with this type of renal lesion may be wrongly diagnosed as cases of chronic nephritis.

Radiological Features

Radiologically the most striking feature is the great lack of calcium salts throughout the skeleton. The cortex of the bone loses its ivory character and may be reduced to a thin, uneven, linear shadow. The medulla becomes less dense, with resulting accentuation of the bone pattern at first, but later cancellous bone tends to fade entirely. In the skull there is a uniform miliary granular mottling with small translucent cyst-like areas. The vertebrae may become biconcave like fish vertebrae, and they are then reduced in height. There may be evidence of cysts, but these only rarely expand the corticalis. At times the cysts are difficult to see, so great is the lack of calcium in the surrounding bone. The cystic changes come on late in the disease, and their presence is not essential to diagnosis. All the bones of the body may be affected, even the phalanges of the hands and feet. Areas of subperiosteal resorption in the long bones and phalanges are common. The pelvis undergoes pressure deformities due to the thrust of the femoral heads: cyst-like areas are common in the pelvic bones. The femora and ribs may bend and collapse.

In estimating the density of the radiographic shadows of bones it is found necessary to use a controlled method. A control subject is chosen of the same sex, age, weight, height, and build as the patient. The corresponding limbs of patient and control are placed side by side and exposed simultaneously on the same negative. Where a series of radiographs is taken in one patient the same control subject is used each time. The urinary tract should always be examined for calculi. Where metastatic calcification has occurred in the kidneys it will show in radiographs. On examination of the chest and neck it must be borne in mind that a parathyroid tumour may vary greatly in size and position, and that its shadow may be found in the mediastinum.

Calcium and Phosphorus Metabolism

Increased production of the parathyroid hormone leads to characteristic changes in the calcium and phosphorus metabolism. The serum calcium is raised, and the figures vary between 12.6 and 23.6 mg. per 100 c.cm. Values as high as 14 mg. per 100 c.cm. are not uncommon. Any serum calcium figure of 11 mg. per 100 c.cm. should be regarded as suspicious, and therefore be repeated. The plasma phosphorus figure is low, and may vary between 1 and 2.7 mg. per 100 c.cm. The combination of this high calcium and low phosphorus figure almost always indicates hyperparathyroidism, but in cases in which there is renal impairment the plasma phosphorus figure may become elevated. The plasma phosphatase figure is raised in all cases of hyperparathyroidism in which bone disease can be detected. There are cases without detectable bone disease in which the plasma phosphatase is normal.

An increased calcium excretion in the urine is always present, and varies from slightly above the normal to eight times the normal figure. In an uncomplicated case the increased calcium excretion is entirely urinary, the faecal excretion being unaffected. In individuals with renal impairment, however, part of the increased excretion is faecal. There is also an increased urinary phosphorus excretion.

Differential Diagnosis

If the history and physical signs are suggestive of hyperparathyroidism complete confirmation of the diagnosis may usually be obtained in the chemical findings—namely, a high serum calcium, low plasma phosphorus, and increased calcium excretion in the urine. In more difficult cases removal of a portion of bone for histological section may be necessary. Without such chemical or histological confirmatory evidence it is not justifiable to explore the parathyroid glands.

The following skeletal diseases are sometimes confused with hyperparathyroidism: osteomalacia, senile osteoporosis, thyrotoxic osteoporosis, osteitis deformans, osteoporosis with renal glycosuria, secondary carcinomatosis of the skeleton, multiple myelomatosis, osteogenesis imperfecta, renal rickets, focal osteitis fibrosa, dyschondroplasia with multiple enchondromata (Ollier's disease), xanthomatosis of bones (Schüller-Christian's disease), and Gaucher's disease.

Treatment

By means of a high calcium and high phosphorus diet it is possible to demonstrate improvement in skeletal calcification, but such treatment is contraindicated because it increases the danger of renal complications. No beneficial clinical or metabolic results have been observed in the treatment of hyperparathyroidism by *x*-irradiation. The treatment is surgical. The parathyroid tumour itself has been palpable in less than 20 per cent. of cases.

Even the largest tumour removed, which measured 7.5 by 5 by 1.8 cm. and weighed 26.2 grammes, could not be felt in the neck as it was behind the trachea. The patient should be prepared for operation by giving for some weeks a high calcium diet and vitamin D. The neck should be explored through a collar incision and the four sites of the parathyroids examined. The chief operative difficulty is that of finding the tumour. Search must be made from the bifurcation of the carotids to the arch of the aorta. If a single parathyroid tumour is discovered it should be excised, but if two tumours are found there is some risk in removing both. In at least six cases the tumour has been removed from the mediastinum. In eight cases two parathyroid tumours were removed; five of the patients survived this drastic treatment and the other three died in tetany. In three cases subtotal parathyroidectomy was performed, for the good reason that in each of them two normal parathyroid bodies had already been excised.

When no tumour at all has been discovered removal of one or two normal parathyroid glands has had no permanent good effect. Such an operation does not in fact seem to be permissible, for in every case of hyperparathyroidism yet recorded there has been a tumour measuring at least 0.7 cm. in its greatest diameter. Moreover, 30 per cent. of the deaths recorded after operation have been due directly or indirectly to interference with one or more normal parathyroid bodies. In less than 4 per cent. of recorded cases has death immediately followed operation, but in 10 per cent. tetany or a renal complication killed the patient at periods varying from nineteen days to fourteen months later. Even if we allow that unsuccessful ventures do not always find their way into print the operative mortality is not high, and this in spite of the fact that the technical problems confronting the surgeon may be complicated. Thus in 1931 Walton reported a case in which search in the usual sites of parathyroid glands did not reveal a tumour, and a small mass in the lower part of the thyroid gland was removed in the belief that it might be a parathyroid tumour. However, on section this proved to be thyroid tissue, and since its removal was not attended by any material chemical changes in the blood Walton opened the wound five days later. He then incised a deep layer of the cervical fascia which forms the bed of the thyroid gland, and two parathyroid tumours were found and removed. One tumour was lying behind the oesophagus, and the second—and larger—retrosternal tumour was lying in front of the second and third thoracic vertebrae. Since learning of this experience others have realized that previous unsuccessful explorations have been incomplete. In one such case seven exploratory operations were performed in the course of six years, the tumour being found ultimately only by dividing the sternum (Churchill and Cope, 1934). The ordinary post-operative treatment should include a high calcium diet, vitamin D, and ultraviolet irradiation. Rarely, in cases in which giant-celled tumours have destroyed a bone, amputation is necessary. Operation upon the kidneys may be required for renal calculi.

EFFECTS OF TREATMENT

Removal of a parathyroid tumour brings about dramatic changes. Many crippled patients have been able to dispense with sticks and crutches. Usually, for some reason not yet clear, pain in the bones goes away immediately. Spontaneous fractures often heal as readily as cases of fractures in healthy bones. Decrease in size of osteoclastic tumours of bone within a few weeks of operation on the neck has now been many times recorded. The effect of treatment in increasing the density of bone is really remarkable, and controlled radiographs have demonstrated this point now many times. There is marked gain in weight. It is interesting to note that the symptomatic changes bear no relation to the size of the tumour. Thus a woman of 37 after four years of total crippledom, including great bone deformities and destruction of hip-joints and shoulder-joints, had a tumour weighing only 1.3 grammes removed, and is now able to walk with sticks and to sew and knit.

As a rule the level of the serum calcium and plasma phosphorus and the excretion of calcium and phosphorus in the urine are restored to normal. Sometimes, indeed, there is temporary hypocalcaemia and even oliguria. Latent tetany after operation has been common, and manifest tetany has often occurred—followed by death in four cases. In one published case tremor and acute mania came on three weeks after operation, at a time when the serum calcium had dropped to 6.6 mg. per 100 c.cm., but the condition was completely relieved in three days by giving injections of the parathyroid hormone in conjunction with a preparation of calcium administered intravenously. This must undoubtedly be regarded as the essential treatment of severe post-operative tetany after removal of a parathyroid tumour.

BIBLIOGRAPHY

Bauer, W. (1933). *J. Bone Jt. Surg.*, **15**, 135.
Churchill, E. D., and Cope, O. (1934). *Surg. Gynec. Obstet.*, **58**, 255.
Hunter, D., and Turnbull, H. M. (1931–2). *Brit. J. Surg.*, **19**, 203.
Walton, A. J. (1931–2). Ibid., **19**, 285.

VOLUNTARY HOSPITALS: A FEDERATION SCHEME

RECOMMENDATIONS OF SANKEY COMMISSION *

Nearly two years ago at its annual conference the British Hospitals Association resolved to appoint a Commission to consider the present position of voluntary hospitals and how far, in view of legislative and social developments, steps should be taken to promote their interests and safeguard their future. A commission of ten members was set up under the chairmanship of Viscount Sankey. The members of the medical profession on the Commission were Sir Henry Brackenbury, Professor L. S. Dudgeon, Colonel D. J. Mackintosh, and Provost A. W. Sheen, and the others were Miss Bartleet, an alderman of the Birmingham City Council, Mr. Alan Davies, a former mayor of Wolverhampton, Mr. H. L. H. Hill, a past-president of the Institute of Chartered Accountants, Miss E. M. Musson, chairman of the General Nursing Council, and Sir Reginald Poole, a past-president of the Law Society. Mr. R. H. P. Orde, secretary of the British Hospitals Association, acted as honorary secretary.

The Commission began its work in January, 1936, and it was intimated that a report might be expected by the following June. The fact that the Commission has taken fifteen months over its report indicates the complexity of its task. The hearing of evidence occupied twenty-one sittings. The Royal Colleges, the British Medical Association (through Dr. Peter Macdonald, chairman of the Hospitals Committee, and Dr. Charles Hill, Deputy Medical Secretary), the Medical Superintendents' Society, the

* *Report of the Voluntary Hospitals Commission.* British Hospitals Association, 12, Grosvenor Crescent, London, S.W.1. (1s. net, 1s. 2d. post free.)

Socialist Medical Association, and the College of Nursing were among the bodies which tendered evidence.

General Survey

The report begins with a tribute to the voluntary system. The strength of that system resides in the spirit of co-operative endeavour which inspires it and in the freedom of administration which it permits. It is in such an atmosphere that medical education, for which the voluntary hospital system has long been responsible, best flourishes. But the system has its weaknesses, chiefly the difficulty and uncertainty of finance. Its position is affected by the rise of the public authority system of hospital and health services: but there seems to be no reason why for many years to come the two systems should not advantageously exist side by side, learning from and co-operating with each other. Some form of co-operation was projected under the Local Government Act, 1929, but the obstacle to bringing such co-operation about is the looseness of the organization on the voluntary side. The thousand voluntary hospitals in this country, unlike the council hospitals, have no adequate authority to bring them together for corporate discussion in their respective regions with official bodies.

In a leading article in the *British Medical Journal** at the time the Commission was set up it was suggested that its most important task would be to recommend a suitable form of organization and machinery of both a regional and national character for bringing about some kind of federation among voluntary hospitals. The difficulties, however, were not disregarded. Areas differ in character. Local pride and enthusiasm are important elements in hospital support. In certain towns there is rivalry, with its good and harmful aspects, between the hospitals. Methods of management and monetary collection are varied. Elasticity in detail must be maintained, regimentation and bureaucratic control avoided. It would not be possible to reduce all hospitals to a common denominator, and exceedingly unwise if it were. Moreover, some hospitals are redundant, and yet must be preserved. Donors and testators cause buildings to be erected and endowed in places already amply served, or build hospitals without providing for their equipment, still less for their maintenance, so that the neighbourhood is saddled with the necessity for charitable appeals. One of the principal things that a body which could speak for all hospitals in a locality might do would be to educate hospital benefactors.

Co-operation Among Hospitals

The outstanding recommendation of the Commission is that the country should be divided into regions, corresponding presumably to the present regions of the British Hospitals Association (of which there are twenty-three, one of them covering the whole of Scotland), and that in each region there should be a council to correlate hospital work and needs. These bodies would have no coercive powers, but they would of course exercise a good deal of authority. To avoid inconsistency and diversity of decisions as between regional councils it is also proposed that a central council be established, consisting of delegates from the regions with other persons of national standing, which would advise the regional bodies. The British Hospitals Association is the only organization representative of voluntary hospitals as a whole. Admittedly it has its defects and shortcomings; it was likened by one witness to a schoolmaster without a cane endeavouring to keep order among a thousand mischievous boys. But the Commission feels that it is the obvious body to take the initiative.

Those who recall recent hospital history will be reminded of Lord Chancellor Cave's Committee in 1921, which resulted in the setting up of a voluntary hospitals commission with local committees. It is rather an unhappy precedent, for the organization failed to bring about the necessary reforms, it never secured the hearty support of the hospitals themselves, and gradually ceased to function. But much has happened during sixteen years. In 1921 the council hospital had not appeared above the horizon, and there was no external menace to induce the hospitals to give up their cherished autonomy. To-day the hospitals themselves are demanding the very reforms which the Cave Committee urged upon them and which they neglected to carry out.

Already in some areas action has been taken to prevent uncontrolled hospital building and to bring about co-ordination. In Manchester an advisory board has been set up to guide public opinion and philanthropic effort in the right direction. In Oxford an attempt is being made to bring about a reasonable degree of co-ordination of hospital services in the Radcliffe Infirmary area, and there are similar efforts in Liverpool and Sheffield.

Central and Regional Organization

What would the proposed central and regional councils do? The central council would be able to indicate the extent of each region and would put neighbouring regions in contact so that there would be no overlapping and no gaps. Eventually a complete mapping of the country into regions would be obtained, and in each region the location and character of the hospitals, their accommodation, and their relationship to the distribution of the population and to the council hospitals would be clearly established. The important duties of the regional headquarters would be to receive such daily information from the hospitals as would enable them to maintain a list of empty beds, to know where patients could best be sent according to their disabilities, to arrange transfers, and to avoid waiting lists. They would keep records of patients and, with the patient's consent, would furnish to hospitals and medical attendants relevant information therefrom. They would control an ambulance service, keep a list of blood donors, form a centre for social service, co-operating with the almoner service of the hospitals, and collect and supply morbidity statistics. Among their other duties would be to bring about the adoption by hospitals of joint purchasing schemes, to advise on hospital building, enlargement, and development, to analyse the finance of individual hospitals so that comparisons of expenditure could be made, and to co-operate in publicity.

The grading of all the hospitals in the region would be carried out by the regional council. Hospitals would be divided into central, district, and cottage hospitals. A central hospital would make a maximum provision for investigation and treatment of patients, be staffed by consultants, have a large number of beds, and be in or adjacent to a large town. A district hospital would have complete provision for dealing with ordinary maladies, its staff would consist wholly or partly of general practitioners chosen for their abilities in particular directions, it would have not less than 100 beds, and be situated in or near a medium-sized town. The cottage hospital would make only partial provision for patients, be staffed by all the local practitioners, have a small number of beds, but not less than twenty, and be situated in a small town or country district.

* *British Medical Journal*, February 29, 1936, p. 419.

Hospital Finance

The voluntary hospitals are, taken as a whole, financially solvent, with an annual maximum surplus of over one million. But, as we have pointed out more than once in discussing the hospital statistics for the year, this is the result of pooling on paper a thousand separate exchequers, some with surpluses but others with deficits, which actually are never pooled and have no more in common than banking accounts of competing firms. The Commission believes that if the thousand hospitals were able to distribute their total annual income in accordance with their individual needs their financial position would not be unsatisfactory. It recommends as a first step the creation of regional funds on a basis similar to that of King Edward's Hospital Fund for London. Such funds would have the double advantage of creating new sources of support and of educating donors to help the hospitals as a whole with the knowledge that their contributions would be directed into deserving channels.

On the subject of State subsidies the Commission pleads for a realistic view of the situation, without too much regard to precedent. The work undertaken by voluntary hospitals is of national importance, and if voluntary effort cannot find the money for it any traditional disinclination to accept money from the State should disappear. The State does in fact already contribute towards the cost of treatment of certain classes of patients, and it recognizes the responsibility of the hospitals for the education of the doctor and the nurse. All that remains to be considered is the adequacy and the method of payment.

Each of the proposed regions would be self-limited as regards collection of funds. All hospitals should endeavour to arrange their collections so as not to "poach," but it would be equitable for the central hospitals to seek financial support over the large areas which they serve, although such areas include those of the smaller hospitals, while the teaching hospitals might justifiably seek benefactions even more widely.

The Commission welcomes the establishment and growth of contributory schemes, and approves the income limits laid down in the Hospital Policy of the British Medical Association.

Accommodation

The Commission then goes on to consider a number of questions which might not be regarded as strictly within its terms of reference, but rather to be referred to the central council when appointed. It is generally accepted that bed accommodation should be equivalent to two beds per 1,000 of population, but there must be variations according to district. The provision of auxiliary hospitals—a better name than convalescent homes—would be an enormous relief to the general hospital, assisting a much more rapid turnover of patients. The further establishment of special hospitals devoted to particular classes of disability or special sections of the population is, generally speaking, to be deprecated as making for rigidity of accommodation. Efficient and speedy co-operation between hospital and outside nursing services is to be encouraged. Every hospital should seek the greatest possible elasticity in the allotment of its beds to various classes of patients. It would assist the problem of accommodation if specialist members of the staff of the central hospital would act as visiting consultants to smaller hospitals in the region.

The Commission regards it as the duty of voluntary hospitals to provide beds for paying patients; and, as far as administrative arrangements permit, the patients should have free choice of medical attendant. The establishment of provident schemes for paying patients of moderate means is to be welcomed.

With regard to out-patients the Commission has taken cognizance of the view expressed by the British Medical Association that attendance should be restricted to casualty cases, cases bringing a recommendation or letter from a practitioner for a consultative opinion, cases which, following upon such consultation, are found to require special treatment not conveniently obtainable elsewhere, and cases of discharged in-patients requiring special treatment for a further period. It agrees that ultimately it may be found possible to restrict the department in this manner, but it holds that there are persons of small financial means—dependants of lower wage-earners insured under the national health insurance scheme, and some others of like status—who should be kept in view, and it might not be advisable to insist on such a restriction at present.

The Visiting Medical Staff

On the question of appointment of the visiting medical staff the Commission considers that the appointing body constituted by the board of management should be small. It is unwise to make appointments by mass meetings. Appointments should be for a term of years, but renewable; it is not to be anticipated that the appointment would normally terminate before the age limit was reached (60 is suggested), but such a provision would be a safeguard. The Commission has taken note of the report of the Linlithgow Committee on payment of medical staffs, and states that all the evidence it has heard goes to establish the principle of such payment. The principle does not apply with quite the same force to members of staffs of teaching hospitals, who have in their position a professional asset of considerable value, or to staffs of hospitals with a large number of pay-beds, though the advantages of such positions are subject to some qualifications. While the general principle of payment is approved no universal application of the principle can be expected immediately; local opinion must be allowed to grow. A part-time honorarium or salary will probably be found the best method, but it must entail a statement of duties undertaken and an obligation to fulfil them more exactly than has sometimes been regarded as necessary.

On the special position of the teaching hospital the Commission considers that financial support for medical education should include adequate attention to the part which the teaching hospital plays. Such a hospital must include in its work the care of all classes of disabilities in sufficient numbers to meet students' needs. It should receive patients in the early stages of disease who might otherwise receive preliminary treatment elsewhere; its out-patient department must cover as wide a range of maladies as possible, and retain patients in a way not necessary in other hospitals in order that they may be observed to a conclusion.

Finally the relationship between voluntary and council hospitals is glanced at. The growing realization of interdependence is welcomed, and representation of local authorities on regional councils and of the Ministry of Health on the central council is suggested. The Commission realizes that many of its recommendations are already fulfilled in greater or less degree, but it desires to bring about a complete system of hospital co-operation.

CARE AND AFTER-CARE OF THE TUBERCULOUS

EMPIRE CONFERENCE IN LONDON

Under the auspices of the Overseas League and the Papworth Village Settlement an Empire Conference on the Care and After-care of the Tuberculous was held in London, at Overseas House, St. James's, during the past week. It was attended by delegates from India, Canada, South Africa, and the Colonial Empire, members of the tuberculosis services in the United Kingdom, and representatives of the medical services of the Royal Navy, Army, and Air Force. The first three days were devoted to discussions, and later in the week Papworth and other centres of interest were visited. The Marquess of Willingdon presided over the opening session and read a message from the patron of the Conference, the Duke of Kent, who referred to the movement as a "splendid gesture of co-operation between the medical services of the British Commonwealth of Nations."

Inaugural Address

Sir KINGSLEY WOOD, the Minister of Health, delivered an inaugural address. Until some ten or eleven years ago, he said, tuberculosis stood first amongst the principal epidemic or general diseases as a cause of mortality. To go further back, during the period 1851–5 it was responsible for a death rate of 3,638 per million of population. Since then, however, the statistics had shown a continual decline, and in 1935 the standard death rate was 687 per million. At the same time, he deprecated any spirit of complacency. Tuberculosis still stood next to cancer in the list of killing diseases. After discussing briefly the public measures against tuberculosis, including those taken under national health insurance, Sir Kingsley Wood said:

"I think we can point with a measure of satisfaction to the position to-day. The material growth of schemes in England and Wales can be judged from the fact that as against 5,200 beds in 1911 there were at the end of 1935 some 29,000 in approved institutions, of which approximately two-thirds were institutions belonging to local authorities, who also contribute largely to the maintenance of voluntary institutions. I do not think I exaggerate the position when I say that the country is covered by a network of tuberculosis dispensaries with an attendant staff of officers and visitors working in touch with general practitioners and the medical officers of health of the local sanitary authorities."

But much ground remained yet to be covered, and the winning of it was a worthy task.

Modern Outlook on Tuberculosis

Sir ARTHUR MACNALTY, Chief Medical Officer to the Ministry, who followed, contrasted the pessimistic outlook of earlier times with the reasoned optimism of to-day, though there were in the "dark ages" of tuberculosis treatment some progressive physicians who anticipated the modern view. Robert Graves (1796–1853), familiar for his work on exophthalmic goitre, was one who realized that the cure of tuberculosis was possible not only in the early stages but in stages of moderate advance with cavities. Koch's discovery of the tubercule bacillus enabled a more scientific approach to be made. Opinion gradually grew in favour of the open-air method for consumptives, and systematic sanatorium treatment was stimulated by the work of Brehmer at Görbersdorf, of Walther at Nordrach, of Robert Philip and Marcus Paterson in this country, and by the establishment of the sanatorium at Midhurst.

The medical practitioner now treated tuberculosis with greater hope and more success. He had found in artificial pneumothorax a valuable aid in the treatment of cases in early and moderately advanced stages. More work was being done to-day in thoracic surgery. Lives were prolonged by thoracoplasty and other forms of collapse therapy. Here a judicious selection of cases was all-important. It must be remembered that pulmonary tuberculosis still revealed itself by physical signs and symptoms, and that palpation, percussion, and auscultation were not displaced but reinforced by radiography. After glancing at the work done on surgical tuberculosis, Sir Arthur MacNalty concluded with the remark that tuberculosis was no longer to be relegated entirely to the physician or surgeon. Its social implications were far-reaching. It was for this reason that sanatorium benefit was embodied in national health insurance in the early days, and this had led to the tuberculosis schemes of local authorities. The public had co-operated splendidly in taking advantage of the facilities provided. Voluntary and lay workers had laboured side by side with professional workers, and had seen their reward in a steady decline of the tuberculosis death rate year by year. It was said of a French marshal that he knew how to win victories, but not how to make use of them. It was not enough to lessen the death rate, the sociological side of the matter must receive attention, and here he extolled Papworth as an example.

The Problem in India

The first speaker from over-seas was Major-General Sir CUTHBERT SPRAWSON, director-general of the Indian Medical Service. The steady decline in mortality from tuberculosis in Great Britain, he said, was not matched in some over-seas countries of the Empire, certainly not in India. The incidence of mortality from tuberculosis in India was really not known, except so far as the Army and the prison population were concerned. The Public Health Commissioner of the Government of India in his latest report estimated that there were about two million cases of tuberculosis in the country, and this figure was probably below the mark. Many cases went undiagnosed and unreported. Even as it was, in the cities of Poona and Ahmedabad one out of every twelve deaths, and in Cawnpore one out of every eleven, was due to tuberculosis. While the English city of Ipswich had a death rate from pulmonary tuberculosis of only 52 per 100,000 population, that for Calcutta in 1934—and it was probably an under-estimate—was 240. There was a general feeling, moreover, that the incidence was increasing. Twenty years ago the Government of India appointed an expert, Dr. Lankester, to examine the question, and he reported then that tuberculosis was on the increase, and since then much industrialization had taken place. It was the general experience that industrialization, especially if not well controlled, and the migration of the rural population into cities, was accompanied by a higher disease rate.

Canada and South Africa

Dr. R. E. WODEHOUSE, Deputy Minister, Department of Pensions and National Health, Ottawa, gave a brief account of the Canadian position. The death rate for tuberculosis (all forms) was 60 per 100,000 population; in 1900 it was 180. This figure included the deaths among North American Indians, in whom the disease had a high prevalence. In its care schemes Canada was following American rather than British practice.

A report was to have been given by Dr. B. A. DORMER, representing the medical services of the Union of South Africa, but in his absence through illness it was made by Dr. A. D. PRINGLE, the representative of the Transvaal Chamber of Mines. The tuberculosis death rate among the two million Europeans in South Africa was on the whole more favourable than in European countries, but among the seven million coloured persons it was certainly alarming. The notifications of tuberculosis in 1936 were: Europeans, 792; non-Europeans, 8,755.

Dr. Pringle made his own report later on the conditions on the Rand and in the Transvaal and Natal generally among the European population. He described as connected with the mining industry four institutions for the care of the tuberculous. The first was the Springkell

Sanatorium, Johannesburg, which was divided into three sections—for silicotics, for early cases of tuberculosis, and for advanced cases. The others were the South African Institute for Medical Research, the Medical Bureau of Examiners (who examined all applicants for underground work), and the Miner's Phthisis Compensation Board. A miner who had silicosis in any of its stages and developed tuberculosis as a complication was immediately put off work and received a pension, varying with his family circumstances, of from £12 to £22 a month. The underground worker who suffered from pure tuberculosis received a lump sum payment of some £600 or £700, but had no legal pension. Dr. Pringle gave an account of the help, apart from monetary compensation, which the gold mining industry gave to tuberculous ex-employees, especially in finding them suitable employment if they could undertake it, and in looking after their children. Among miners engaged since the establishment of the Bureau of Examiners in 1916 the tuberculosis prevalence was about the same as among members of the Royal Air Force. Speaking generally, there had been a fall of some 66 per cent. in the prevalence of tuberculosis among European miners.

African Native Races

Professor S. LYLE CUMMINS said that there was a more hopeful aspect of the tuberculosis problem as relative to communities of a primitive cultural type. The admittedly high susceptibility to the disease among African natives was far more marked when they were exposed not only to infection but to severe industrial stress or unfavourable environmental conditions. Under their own natural or tribal conditions of occupation, diet, housing, and social life, tuberculous infection was on the whole fairly well tolerated and might even assume a more or less "European" clinical type, permitting a long survival and being amenable to treatment. Thus there was scope for well-organized and scientifically planned tuberculosis schemes adapted to native custom and tradition and within the economic power of the Governments concerned. He paid a warm tribute to the voluntary efforts of Christian missions. Only those who had visited the Franskoi and the Ciskoi could appreciate sufficiently the unstinted devotion and admirable scientific accomplishment of such men as McVicar of Lovedale, Drew of the Holy Cross Mission, and the missionaries and nurses at St. Cuthbert's. It was to be hoped that the Government would follow the medical missionaries in adapting its developments to native customs and preferences, stressing the medical as opposed to the administrative side of the work, and saving the public purse from the unnecessary drain of marble halls for the patients, expensive accommodation for staffs, and "the beautiful perfections of sanatorium construction so dear to inspecting officers and so dreaded by the simple and illiterate natives."

He also mentioned the great sanatoriums of Nelspoort and Springkell, the former designed very much on the architectural lines of Midhurst. For these up-to-date and efficient institutions South Africa was indebted to the late John Garlick of Capetown—a man who expressed quite definitely the Papworth idea adapted to South African, and especially to native, conditions—the Chamber of Mines at Johannesburg, and the Union Government.

Sociological Implications

In presiding over the second session of the Conference VISCOUNT DAWSON OF PENN referred to the movement in this country towards an improved standard of physical fitness. But physical fitness was not going to be produced only by change of environment; heredity had its application in this particular problem. If there was to be a fit race care must be taken for all people suffering from communicable disease. Care and after-care, for example, of an open case of tuberculosis was not only an act of mercy—or of justice—for the unfortunate individual, but an act of necessity for the health of the community. The growth of knowledge on the one hand and of social conscience on the other had led to the saving of many who in previous generations would have been removed by death. But herein lay a danger. People who were patched up were not good begetters of the next generation, and the more patched-up lives that were saved the greater the danger. This was an argument not for relaxing in the least the care of those who could only be patched up and not be cured but for separating the two classes. Unless that were done, the bestowal of kindness and care to-day might result in the infliction of injustice on the next generation. Papworth did recognize that demarcation between the two groups of cases, and, while recognizing it, cared efficiently, mercifully, and kindly for both.

Tuberculosis and City Environment

Dr. S. VERE PEARSON, the new chairman of the Joint Tuberculosis Council, spoke on factors in city life which favoured tuberculosis. Was it realized that London was thirty miles across? Capital cities were sucking up the people from the rest of the country. The conditions of such concentration which seemed to have a bearing on the prevalence of tuberculosis were: (1) the time and energy wasted in travelling to and from work, (2) the growing difficulty of obtaining open-air recreation within reasonable distance, (3) the anxiety associated with city environment. Yet a town healthily planned might have a low death rate. The tuberculosis death rate for Letchworth was only 38 per 100,000, as compared with 46 for Hertfordshire and 60 for Norfolk.

The same subject was dealt with by Dr. F. R. G. HEAF of the Public Health Department, London County Council. He said that the average rate of incidence of pulmonary tuberculosis for outdoor manual workers was greater than for indoor non-manual workers, and quoted figures which, he said, were a severe criticism of the old idea that an open-air occupation was essential for the tuberculous patient. The figures also showed that the class which endured the hardest physical strain, received the lowest wages, and spent the smallest amount on food was the one most prone to tuberculosis. The vast majority of adults (assuming they did not receive a very massive dose of tubercle bacilli) would remain free from active tuberculosis even if they came into contact with infection quite often provided they were well nourished and not subject to excessive physical and mental strain.

Environmental Factors

Finally, Sir PENDRILL VARRIER-JONES, medical director of Papworth, declared that tuberculosis must be regarded as a disease which had its roots in the social structure. To regard it from a purely medical point of view was as wrong as it would be to ignore the bacillus itself. What was it that governed susceptibility and resistance? Not merely material conditions, but a mental state. The mental state which predisposed to tuberculosis was brought about by an imbalance of the endocrine system, which somehow upset and undermined resistance to disease. The means by which this mechanism operated needed to be carefully studied, and research of an intensive kind along these lines ought to be undertaken. From twenty-one years' observation at Papworth he was confident that much more than material conditions were responsible both for their well-being and for their success in keeping disease in check.

The speaker complained of the persistence of a mediaeval outlook whereby diseased or disabled persons were regarded as inferior creatures. The man who had contracted tuberculosis had done nothing wrong; often he was a victim of civilization, and should be compensated for the wrong done to him.

"It may be asked why the medical profession should concern itself with these matters. Is the physician to be a jack-of-all-trades with a little knowledge of medicine, a little of sociology, and a little of economics? My answer must be prefaced by another question. Is it not true that unless socio-

logical and economic factors are correlated with medical treatment the tuberculosis problem is in the present state of knowledge insoluble? If the answer is in the affirmative then surely the medical profession must so concern itself. . . . It is beyond question desirable that the physician should know something of humanity and human aspirations, something of wages and hours and problems of management. If he will co-operate with his patients, using and supplementing their knowledge and letting them use and supplement his, he will succeed in assisting them rapidly and surely towards recovery."

Tuberculosis in Countries of the Empire

The third session of the Conference was presided over by Lord HORDER, who said that the tendency to speak of tuberculosis as being under control in this country struck him as an over-statement. It was true that the morbidity and mortality rates during the last two generations in Great Britain showed considerable improvement, yet John Bunyan's striking description of tuberculosis as one of the "Captains of the men of death" remained true. Tuberculosis still accounted for six times as many deaths as happened on the road. It was a lugubrious thought that during the twenty-four hours since the Conference had opened ninety deaths had occurred in Great Britain from this disease in one form or another. In some parts of the Empire the mere diagnosis of tuberculosis struck a death knell, as it did in this country a few generations ago. In many countries the equipment necessary for carrying out treatment during the active stage of the disease and the provision for the very necessary after-treatment was lacking. The virulence of the disease elsewhere was also much greater than in this country. The process of racial immunization was only beginning in some of those parts of the Empire for which they were responsible.

Dr. R. J. COLLINS, representing the Canadian Tuberculosis Association, gave some account of Canadian conditions, especially in his own province of New Brunswick. Each Canadian province had developed its tuberculosis work on its own lines. Something was done in the way of vocational training, supplemented by the placing of men in sheltered employment.

The Government of Australia was represented by Dr. A. J. COLLINS, who detailed the public health measures put into force against tuberculosis, more particularly in New South Wales. A village settlement on the principle of Papworth was in embryo. Pulmonary tuberculosis was not as serious in Australia as in many parts of Europe. The climate did not favour the disease, and the cities were not congested. The death rate from pulmonary tuberculosis in New South Wales was only 35 per 100,000 of population; ten years ago it was 44, and in 1875 it was 114. A good deal had been done in the way of public education. Something remained to be done in propaganda among the medical profession. It was only a small proportion that was at fault in lax notification with delay in treatment, but the effectiveness of the public health measures were thereby to some extent stultified.

Fight Against Tuberculosis in Wales

Dr. D. A. POWELL, principal medical officer of the Welsh National Memorial Association, said that the disease continued to exact a heavy toll from the Welsh people, particularly in the western and north-western seaboard counties. The death rate in 1936 was 85 per 100,000. It had fallen since 1911 by 43.5 per cent. What was the cause of the high incidence? It could not be the germ. Even the most ardent nationalist had not yet isolated a Welsh strain of the bacillus. It must be the intense conservatism of social habits and the closeness and density of the family relationship. Kinship was recognized to the eighth remove in Wales. Three occupations of the country added to the liability: coal mining, quarrying, and seafaring.

The later proceedings of the Conference, including Sir HENRY GAUVAIN'S address on some problems of surgical tuberculosis, will be referred to in the next issue.

DOMICILIARY MIDWIFERY SCHEME FOR LONDON

At its meeting on May 4 the London County Council was informed of the progress made with the preparation of proposals for giving effect in London to the requirements of the recent Midwives Act for the provision of a domiciliary service of midwives adequate to the needs of the county.

It is proposed to organize the services under the Act in five areas, the first comprising the eastern and north-eastern boroughs, the second the City and certain adjacent boroughs, the third the western and north-western boroughs, the fourth the south-western and some of the south-eastern boroughs, and the fifth the remainder of the south-eastern area. Each area will have a complete and as far as possible self-contained domiciliary service. Hospital accommodation, when required, will be provided by the Council, the voluntary hospitals, and the borough maternity hospitals. Domiciliary confinements and maternity nursing will be undertaken by midwives employed either directly by the Council or indirectly through voluntary hospitals and other voluntary agencies. "At the same time," says the report of the Hospitals and Medical Services Committee, "there will be ample scope for general practitioners and private practising midwives."

Medical aid for domiciliary cases will be provided either by the voluntary hospital concerned or by a panel of medical practitioners, approved by the Council, after consultation with the Metropolitan Counties Branch of the British Medical Association, and large enough to give the patient a free choice of doctor. It is hoped that where voluntary hospital medical schools are concerned the opportunities for training in the neighbourhood of each hospital will, as far as possible, be at the disposal of medical students in preference to pupil midwives. Every care will be taken to safeguard the right of the mother to free choice of midwife.

For the purpose of calculating the amount of grant to voluntary hospitals and maternity homes the arrangement for the first year (subject to revision afterwards in the light of experience) will be on the assumption that a midwife can undertake eighty cases a year, either acting alone or accompanied by a medical student, or 100 if pupil midwives are associated with her, and the cost of a whole-time midwife's service, including cost of relief and allowance for equipment and travelling, will be computed at £250 a year. The grant will be 75 per cent. of the cost calculated on this basis—that is, £187 10s., being equivalent to a payment of £2 6s. 10d. per case attended by a midwife either acting alone or accompanied by a medical student, and £1 17s. 6d. a case if a pupil midwife is associated with the midwife. Contributions received from patients will be deducted from the Council's grant. A different procedure is followed in calculating the grant to district nursing associations (which will be concerned mainly with maternity nursing and with the provision of relief for the Council's midwives).

Number of Midwives to be Appointed

At present there are 253 independent midwives engaged in domiciliary midwifery in London. Of these fifty-one are employed by private nursing homes. Of the 63,684 births occurring in London in 1935, 22,698 took place in the home, and of these 8,303, or 36.6 per cent., were attended by independent practising midwives, 5,720, or 25.2 per cent., by general practitioners, and the remaining 38.2 per cent. by voluntary organizations (8,309) or by borough midwives (366).

On these figures, and having regard to the demand which the Council is likely to have to meet when the new service is in operation and to the tendency to resort to hospitals for confinement, the Council makes the conservative estimate that, after allowing for the services of

the voluntary agencies and of the midwives employed by some of the metropolitan borough councils, forty-two salaried midwives will be required to be appointed by the Council for midwifery and maternity nursing. For purposes of relief the equivalent of a further six salaried midwives will be required. The salary proposed for the midwives to be employed directly by the Council is £200 a year, rising by annual increments of £12 10s. to £250, and, after a further period of four years, by the same annual increments to £300. Allowances of £38 will be made for uniform, laundry, telephone, and travelling expenses. The midwives' equipment and sterile outfits will be provided by the Council. In making appointments preference will be given to thoroughly competent independent midwives practising in London. It is not proposed at the outset to differentiate between fully trained nurses and midwives holding only the C.M.B. certificate, or to exclude married women provided they are able to undertake full-time employment.

A uniform maximum fee is to be charged for attendance by any midwife under the Council's proposals of £2 for a first confinement by a midwife and £1 10s. for subsequent confinements; and £1 10s. for attendance of a maternity nurse. For the purposes of deciding whether any part of this fee shall in any case be remitted, having regard to the circumstances of the patient or liable relatives, a uniform method of assessment has been worked out and was placed before the Council. In these rules special consideration has been given to the manner of dealing with maternity benefit, and certain concessions are made which it is thought will be reasonable and fair in the interests both of the mother and the Council. The Council has endeavoured, in computing the assessable income, to ensure that family circumstances are not straitened at this period, and that good and ample nourishment is afforded during confinement.

THE NATIONAL BIRTH CONTROL ASSOCIATION MEDICAL CONFERENCE, EDINBURGH

A well-attended conference on the medical aspects of contraception, organized by the National Birth Control Association, was held on April 30, in the Hall of the British Medical Association, 7, Drumsheugh Gardens, Edinburgh.

In a speech of welcome Mr. DOUGLAS MILLER, chairman at the opening session, defined the aims of the association as the promotion of the physical fitness of the mother and her children by such advice and help as would result in a rational spacing of birth or in the prevention of conception in cases in which pregnancy would be detrimental to health. To this end it was necessary to collect and co-ordinate the observations and experiences of research workers and clinicians, so that the best possible advice might be placed at the disposal of those whom it would help. It was also essential to organize and equip voluntary clinics, of which there were now between fifty and sixty throughout the country. Mr. Miller stressed the fact that clinics under the auspices of the association gave advice not only on the prevention of pregnancy but also on problems of sterility and marital maladjustments. The chief purpose of the afternoon discussion was to assess the relative value of the various methods of contraception, and, in particular, to distinguish those which were harmless and effective from those which were not.

Contraceptive Technique

Dr. HELENA WRIGHT said that the contraceptive technique taught at birth control clinics aimed at the provision of a mechanical barrier against direct insemination and of a harmless chemical spermicide, which might be supplemented by a douche. It was necessary that the methods adopted should be effective, harmless, easy to learn, cheap, and acceptable to both parties. These were the standards in terms of which practitioners at the clinics and in private practice should examine the methods offered for their consideration. That the technique adopted at English and Scottish clinics was effective was shown by a statistical analysis of their results carried out in 1934. In a very large series there were 5 per cent. of "accountable" failures—namely, failures explicable by an omission to carry out the whole or part of the instruction given at the clinic—and from 1 per cent. to 2 per cent. "unaccountable" failures—namely, those for which no such cause could be found. The main difficulty in making statistical studies was that a large proportion of patients did not return to the clinics for re-examination after being taught the methods. In this respect, however, matters were improving. For instance, several years ago at the North Kensington clinic 60 per cent. of the patients failed to return after their first visit; two to three years ago the proportion had fallen to 40 per cent., and recently to only 10 per cent. In Dr. Wright's view the most important lines of investigation were concerned with the vulnerability and resistance of spermatozoa, and the discovery of highly effective, clinically acceptable spermicidal substances. On the psychological aspect it was more difficult to generalize, but it could be stated that no method would be used continuously which was a source of annoyance to either partner.

In the discussion that followed questions were asked on whether methods of contraception were modified in cases of cervical erosion and leucorrhoea; the teaching of patients before marriage; the safe period as a method of contraception; the possible damage to the foetus from a chemical should conception occur; the possible clinical application of the Ogino-Knaus method; sterilization as a means of contraception, including *x*-ray sterilization; and whether a speculum examination was necessary before giving advice.

Chemical Contraception

At the second session Professor F. A. E. CREW, director of the Institute of Animal Genetics, Edinburgh, introduced Dr. JOHN R. BAKER, lecturer in cytology, and referred to the interesting scientific work he was doing at Oxford.

Dr. Baker, describing the work on chemical contraception which had been carried out under a grant from the Birth Control Investigation Committee by himself and his co-workers in the Sir William Dunn School of Pathology, Oxford, opened with a plea for a more logical terminology in chemical contraception, proposing that solid products should be called gel (jelly), fatty, or tablet suppositories, while the terms "paste," "mucilage," and "ointment" should be used for semi-fluid products. The name jelly had been applied loosely to thick, aqueous products properly designated as pastes. In view of the great complication of modern contraceptive methods there were, he held, considerable advantages in the simplicity of gel suppositories containing strong spermicides already in solution and ready for immediate action. The idea that contraceptives must be acid was rejected. Dr. Baker described his laboratory tests of chemical contraceptives, which were concerned with rate of disintegration, acidity or alkalinity, total spermicidal power in alkaline solution, total spermicidal power in acid solution, rate of diffusion of the spermicide from the vehicle, and harmlessness. In the tests of total spermicidal power proprietary products were tried at the standard concentration (S) of one product to 6 c.cm. of sperm suspension, it being postulated that about 6 c.cm. of fluid were usually present in the vagina after coitus. The spermatozoa were examined at five and thirty minutes, and again after dilution with an alkaline fluid favourable to their activity. The dilution revealed whether the sperms had been killed or only immobilized.

A product which killed at S was tried at S/2, S/4, etc. It was thought that a factor of safety of at least four

was necessary—that is, a product must kill all sperms at S/4. In the diffusion test an attempt was made to represent natural conditions as closely as possible. Observations of the activity of the sperms were made at 2, 5, 15, 30, 60, 120, and 180 minutes. In the case of many products on the market the sperms were still active even after 180 minutes. The pathological test was performed on bitches because of the resemblance of the vaginal epithelium to that of the human female. The bitch's vagina was larger than the human in proportion to body size, and therefore half a suppository was the dose. This was inserted daily for a fortnight, when the bitch was killed and the vagina was sectioned for critical examination by Dr. Carleton. Gross damage by certain products in use by women was demonstrated. It was recommended that clinical workers should use the following formula for estimating pregnancy rates when comparing one contraceptive with another: $\frac{100\ P}{M-A+P}$, where P was the number of pregnancies, M the number of menstruations, and A the number of whole menstrual cycles during which the husband was absent from his wife. The formula was similar to Raymond Pearl's. Dr. Baker ended by saying that he was hopeful that his researches would soon disclose a valuable new spermicide, but that he had often been disappointed when he had seemed on the verge of success. He also paid a special tribute to the medical subcommittee of the National Birth Control Association, whose co-operation had resulted in improvements in the methods used in his laboratory.

In the discussion which followed great stress was laid on the importance of collecting a group of persons ready to collaborate in the first application to human conditions of any new chemical method. Such persons being so few at present, progress would be necessarily slow. One result of the conference might be to increase the number of volunteers. During the conference the Edinburgh Mothers' Welfare Clinic at 90, East Crosscauseway and the Museum of Contraception, under the direction of Professor Lelean, in the Usher Institute of Public Health were open for inspection, and many members of the conference availed themselves of the opportunities thus offered.

Reports of Societies

ACCLIMATIZATION TO HIGH ALTITUDES

At a meeting of the Royal Society on April 29 a paper by Messrs. A. Keys, B. H. C. Matthews, W. H. Forbes, R. A. McFarland, and D. B. Dill on individual variations in ability to acclimatize to high altitudes was communicated by Sir JOSEPH BARCROFT.

The International High Altitude Expedition made observations, at sea-level, 9,000, 12,000, 16,000, and 20,000 feet, of the physiological constitution of ten normal subjects, and the authors had now attempted to correlate these observations with acclimatization. The capability of acclimatization of the members of the party was graded by a questionary to which all gave answers as to the deviation in physical and mental performance from their sea-level values of all members of the party. By this classification the members of the party were arranged in order at each altitude. A number of physiological properties were observed at sea-level and at each station. No one of these yielded a good correlation with the classification referred to above, but the whole series taken together, with suitable empirical coefficients, yielded a good correlation with the acclimatization classification—so much so as to encourage the belief that it would thus be possible to predict from sea-level measurements whether an individual would acclimatize well or badly.

THE BLOOD GROUPS AND NON-PATERNITY

At a meeting of the Medico-Legal Society on April 22, with Mr. C. AINSWORTH MITCHELL, the president, in the chair, Dr. G. ROCHE LYNCH read a paper on the medico-legal importance of the blood groups, with special reference to non-paternity.

Dr. Lynch was, he said, reporting on the progress made since he had last spoken on this subject in 1924. The existence of M and N agglutinogens in corpuscles was now established, making three more blood groups in addition to the older A, B, AB, and O groups. These groups were M, N, and MN; there was no group corresponding with O. A combination of the two sets gave twelve possible types of human blood. The agglutinogens were found in other body fluids—such as sweat, saliva, semen, and milk—in certain individuals. Their presence in these fluids, apart from the blood, was an hereditary factor. The agglutinin factors (*a* and *b*) were not found in these fluids. The uses of these blood groups were in transfusion work, in the identification of blood stains and of seminal stains, and in attribution of paternity and determination, very rarely, of non-maternity and child substitution. The factors followed strict Mendelian laws of heredity, and to be present in a child must be present in a parent. Apparent exceptions had now all been explained. The test to-day was as sure as the fingerprint test, if not surer.

Dr. D. HARLEY summarized the rules of inheritance governing the blood groups. A group O parent could not have a group AB child, and vice versa; and no factor could appear unless it was present in the blood of one or other parent. A type M parent could not have a type N child, and vice versa. These rules had been amply confirmed by study of very large groups of families over several generations. They were therefore applicable to false accusations of paternity. If, for instance, a group O woman had a group B child and accused a group A man of paternity, his innocence could be absolutely established. Any man of group B or group AB, however, might have been the father. The groups could never prove that a certain man was the father unless there were a choice between two possible fathers. A BM woman had an AM child; her husband was AM and her lover AN; it was thus shown that the husband was the father. The chance of proving non-paternity varied with the group of the accused man and its frequency in the population from 65 per cent. to 8 per cent. On an average one falsely accused man in three could be cleared. The use of these tests had gone far beyond the experimental stage.

Mr. D. HARCOURT KITCHIN, barrister-at-law, dealing with the legal and practical application of the test, said that he saw no reason why a petition for divorce should not succeed purely on the ground that the blood-group test showed that a given child born in wedlock could not be the child of the husband. It was unlawful for a husband to give evidence that he had not had access to his wife and therefore could not have begotten the child, but evidence based on the blood-group test would not infringe this rule. Turning to the more important subject of affiliation suits, Mr. Kitchin said that a single woman who had a child could apply to the court to make an order against the putative father, and that, if she proved her case and produced satisfactory corroboration and the man could not refute her evidence, a bench of magistrates might order him to pay up to a pound a week until the child was 16. The present difficulties in the way of using blood-group evidence were great. First, its possibilities were unknown and the bench might be so suspicious as practically to decline to accept it; an appeal from their refusal would lie to quarter sessions and thence to the Divisional Court, but would be expensive. If they were open-minded the next difficulty would be to induce the mother to co-operate, for she could gain nothing at all by the test and the bench could not order her to undergo it or refuse her application for an order merely because she would

not undergo it. If she consented, the third difficulty would be to find some pathologist capable of carrying out the test. Most general hospitals could manage the AB test, but the MN test required special knowledge and facilities. At present the expense was beyond the means of the kind of man who was usually defendant to a bastardy application. The fourth difficulty was that, if the test acquitted the man, he would have to pay the pathologist to come and give evidence, for the written report alone was not enough. The fifth difficulty was that if the report did not exonerate the man the bench might run away with the idea that the result showed that he was the father. This danger had probably done more than anything to deter counsel and solicitors from trying to use the test. If the test was to come into general use, as it had in Germany and other countries, it must first become known to solicitors and the public. This might happen if some interesting acquittal attracted the attention of the lay Press. So far the test had never been conclusive against paternity. When the stage of legislation was reached the Bill ought to provide that: (1) the magistrate should have discretion to make the co-operation of the mother a condition of her application being heard; (2) the result of the test should only be evidence if it were conclusive against paternity; (3) the certificate should of itself be evidence without the necessity of calling the pathologist as a witness; (4) the test should be done at the public charge.

The PRESIDENT said that the papers had done much to make counsel for the defendant realize that he ran no risk in accepting the test if offered. Sir ALEXANDER MAXWELL did not think there was much miscarriage of justice, though magistrates had an extremely difficult task. If magistrates could be induced to respect the test something might be done. The subject required investigation and attention.

Sir TRAVERS HUMPHREYS thought the subject important, but from the practical point of view the difficulty about scientific evidence was that it was not conclusive. He protested against the suggestion that the courts set their faces against scientific evidence. If it were once established that this test would further the cause of justice it would be welcomed by the whole profession of the law. Mr. Kitchin had put his finger on the point in saying that to establish the test there must be legislation to compel the co-operation of the mother. There should, however, be no real difficulty about this when its importance was established. Expense was a difficulty in getting any evidence. Assuming the test to be infallible, and no conflict of expert evidence possible, the difficulty arose that the evidence could only be called on behalf of the defendant. The test might be extremely useful in divorce cases: very commonly a working-class man petitioner based his case on the birth of a child which could not be his, but he was not allowed to give evidence to this effect. Nothing could be more useful to such a man than a High Court order for a blood test of all three. Sir Travers hoped that in time the courts would be given power to compel this evidence.

Sir ERNEST GRAHAM-LITTLE thought the reluctance of the legal profession to accept scientific evidence was a real difficulty. The demand for legislation must come from the medical profession. Rather more respect was paid to private Bills nowadays than in the past. Sir WILLIAM WILLCOX thought there was little difficulty in getting new scientific evidence before the courts. In a recent food-poisoning case a plaintiff had succeeded on the strength of a positive agglutination of 1 in 60 which had been recorded on one occasion. The judge had taken the greatest interest in the evidence; no legislation had been needed. Many pathologists would be pleased to do the blood tests for moderate fees.

Judge EARENGEY, K.C., said that the legal profession welcomed medical evidence when that evidence was substantiated. The medical profession must come to agreement about these tests, and the technique must be standardized beyond question before a certificate was accepted as evidence. Discovery was never extended to any personal operation; legislation, however, might be secured to say that if a woman refused the test there should be a stay of proceedings.

In reply Dr. ROCHE LYNCH said that mistakes had in the past been due to a weak A factor in some subjects but never to the interference of the M and N with the A and B factors. He would never object to a provision obliging the pathologist to give evidence if either of the parties wanted it. Dr. HARLEY stressed the invariability of the rules of heredity and the fact that the tests were used in many foreign countries to check the evidence of applicants. Mr. KITCHIN hoped that the Home Office, if it were good enough to circularize magistrates, would ask them to encourage defendants to use the test and applicants to submit to it. He had never suggested that judges of the High Court were not receptive of scientific evidence; merely that as a class magistrates and solicitors disliked it.

HYPNOSIS, SUGGESTIBILITY, AND PROGRESSIVE RELAXATION

At a meeting of the British Psychological Society on April 29, Dr. WILLIAM BROWN, Wilde Reader in Mental Philosophy, University of Oxford, gave an address on hypnosis, suggestibility, and progressive relaxation.

After tracing the history of the subject since the days of Mesmer, and describing some experimental work, Dr. Brown said that it might be supposed that it included a good deal of questionable matter, but he wished to emphasize the clinical and therapeutic side, where it had large constructive possibilities. Hypnosis with suggestion could bring about a state of progressive relaxation more rapidly than the same state could be achieved in any other way. The patient, too, could in time produce relaxation by autosuggestion. Relaxation began with the muscles of the extremities, included the muscles of the back of the neck, and affected eventually the involuntary musculature. The autonomic nervous system was influenced and deep relaxation produced. This relaxation, although it started with the motor muscles, was not confined to them. The state might be used to give suggestions of greater ability in various directions. Customarily the will was regarded as controlling only the voluntary muscles, but by the stimulus of processes which obviously were under the control of the will other processes not so obviously under control were affected.

Dr. Brown referred to some recent work in which an experimenter, after calling out to the subject "Contract," had flashed a bright light into the subject's eye, and, of course, as a result of the light stimulus, the pupil contracted. This was repeated a number of times, and a conditioned reflex was built up, so that when later he said "Contract" but did not flash the light, the pupil nevertheless contracted. Finally, instead of himself saying "Contract" he got the subject to say it, and the pupil still contracted, a conditioned reflex having been built up through the motor mechanism of speech. On the basis of clinical evidence of cases he had treated for many years Dr. Brown believed that under suggestion treatment, with the patient relaxed and passive, it was possible to build up a conditioned reflex. Some scepticism had been expressed as to whether a conditioned reflex could be built up in a hypnotized person, but work in America had shown that it could be built up more quickly and thoroughly under hypnotism than in a normal state. Every person, normal or abnormal, was probably hypnotizable to a certain extent, but those who were most easily hypnotized and to the most profound degree, even that of artificial somnambulism, had a tendency towards the development of psychoneurosis of a hysterical nature. Dr. Brown strongly emphasized that in therapeutic hypnotism only positive

suggestions should be given, not suggestions of inability to perform certain acts, but the contrary. He had found the method useful in raising normal powers to a higher level—for example, increasing the power of memory, not momentarily but permanently, no doubt as the result of removing fears and conflicts which acted as inhibitions and reinforcing the imagination of success, which was of so great importance in psychotherapy. He mentioned a composer who, fearing that he had lost his powers, experienced definite benefit—of which the composer himself, who could be the only judge, had no doubt at all—after four occasions on which suggestion treatment with progressive relaxation was tried.

In reply to a question at the close of his lecture Dr. Brown said that suggestion might help to restore proper function of the digestive processes if at first it were combined with some medicinal remedy. The patient might be encouraged to imagine an increasingly vigorous peristaltic movement of the intestines, and the suggestion might be continued and be effective while the medicinal agent was reduced in amount and presently withheld.

DISTENSION OF THE FOETAL BLADDER

At a meeting of the North of England Obstetrical and Gynaecological Society in Sheffield on April 2 Dr. F. J. BURKE (Liverpool) opened a discussion on dystocia due to over-distension of the foetal bladder by reporting a case.

A multipara, aged 29, was admitted to hospital with dystocia. Labour began at 9 p.m. on January 27, the patient being then about thirty-five weeks pregnant. At midnight the head and hands of the foetus were born, but there was no further progress. When she entered hospital she was having strong pains and was acutely distressed. The fundus reached midway to the umbilicus and the ensiform cartilage, and no foetal heart could be heard. A foetal head and two hands were protruding through the vulva. The foetal neck was long and the cervical spine was fractured, due possibly to previous vigorous traction. The thorax was tightly plugged in the maternal pelvis. On incising the foetal chest wall a large quantity of fluid escaped and delivery was soon completed. The foetus weighed 6 lb. It was considerably elongated, with the abdominal wall in large folds, and there was bilateral talipes equino varus. At necropsy the bladder in its collapsed condition measured 6 by 4 inches and had hypertrophied walls. Both ureters were dilated and the kidneys enlarged. The urethra was patent, a small catheter passing without difficulty.

Dr. Burke said that several similar cases of over-distension of the foetal bladder with patency of the urethra had been described, and he quoted cases reported by Savage and by Crawford and Jeffcoate. He discussed the part played by the foetal kidneys in the production of liquor amnii. Gaylord Bates had pointed out the frequent association of oligohydramnios and foetal renal anomalies. The biochemical studies of Makepiece, Smith, and Carroll strongly suggested that the amniotic fluid was a transudate which in early pregnancy was in isometric equilibrium with maternal and foetal blood; in late pregnancy it became hypotonic owing to the addition of foetal urine. On the other hand there was evidence to suggest that the foetal kidneys did not contribute to the liquor amnii. Phloridzin injected into the mother could be readily detected in the foetal tissues, but it was rare to find even a trace of sugar in the liquor amnii.

The PRESIDENT said that the condition seemed always to be associated with obstruction to the urethra. He supposed it was more common in the male foetus. Mr. J. E. STACEY (Sheffield) thought that a striking point was the elongation of the cervical vertebrae and talipes equino varus. He raised the question whether the condition was associated with any spinal lesion. Dr. BURKE replied that he had no doubt that the elongation of the cervical vertebrae was produced by trauma.

Intestinal Obstruction Caused by Adenomyoma

Mr. A. GOUGH (Leeds) opened a discussion on adenomyoma as a cause of acute intestinal obstruction, and reported a case.

A woman, aged 42, had never been pregnant. She had had gradually increasing constipation for six months, culminating in complete obstruction. The day before Mr. Gough saw her she had absolute constipation as regards both faeces and flatus, and had vomited once. Her general condition was quite good. There was a tense, rounded swelling in the hypogastrium the size of a four months pregnancy. Vaginal and rectal examination disclosed the presence of a hard, fixed mass behind the uterus and involving the upper part of the rectum. On opening the abdomen the rounded swelling was found to be a chocolate cyst of the left ovary. There was much indurated tissue involving the cervix and the upper part of the rectum. A diagnosis of adenomyoma was made, and was later confirmed by histological examination. A colostomy was performed after the bulk of the morbid tissue had been removed, including both ovaries and the uterus. A fortnight later Mr. Gough was able to start canalization of the obstructed bowel by passing gum-elastic bougies up the rectum. These were followed later by rectal tubes passed from the colostomy opening downwards. In a fortnight the passage had been dilated to three-quarters of an inch. The colostomy orifice was closed in stages by the use of an enterotome. Six days later the bowel was dissected from the abdominal wall and the wound was closed. Some leakage occurred, but within three weeks the faecal fistula had disappeared. Mr. Gough said that an acute obstruction due to an adenomyoma must be very rare indeed.

The PRESIDENT said that it was quite clear that the adenomyoma was in the bowel wall and not merely in the recto-vaginal space. Professor LEYLAND ROBINSON (Liverpool) thought that the case showed how important it was that a gynaecologist should have a knowledge of general surgery.

VARICOSE VEINS IN PREGNANCY

A meeting of the Section of Obstetrics of the Royal Academy of Medicine in Ireland was held in the Royal College of Physicians on April 9, with Dr. T. M. HEALY, in the absence of the President, in the chair. Dr. EDWARD SOLOMONS read a paper on the treatment of varicose veins in pregnancy.

Dr. Solomons said that sixty patients were selected from the ante-natal department of the Rotunda Hospital for treatment of varicose veins by injection. The condition was found to be bilateral in thirty-eight and unilateral in twenty-two, while of the total number four cases had associated vulval varicosities. A careful history was first taken, particular attention being paid to the nature of the previous confinements. A history of phlegmasia was a definite contraindication to treatment, and in all cases of suspected impairment of the deep circulation investigation was made. The Trendelenburg test was not carried out, but the simpler Perthes' test was used in cases of suspected deep thrombosis. The veins were examined in a good light with the patient standing. The patient was then made to lie down with the leg slightly elevated: thus the empty vein technique was employed in all cases, but without a tourniquet, as only clearly visible veins were injected. The skin was painted with 2 per cent. tincture of iodine, and a sterile solution of quinine hydrochloride, 0.266 gramme, and urethane, 0.133 gramme, to each 2 c.cm. of distilled water was then injected from a 2-c.cm. Record syringe with a fine needle (No. 17), the maximum amount each time being 2 c.cm., usually given in four divided doses at different sites. On withdrawal of the needle pressure was applied to the point of injection for a few minutes, and then a small collodion dressing was put on before the patient walked home. Fifteen patients whose veins were very large had an elastoplast bandage applied to the whole leg below the knee immediately after injection. The bandage was removed in three weeks'

time, and in seven patients no further treatment was required. In the other eight further injections were given and the elastoplast bandage reapplied for the same length of time. All injections were given at weekly intervals and were never given near the sites of the previous injections for at least two weeks. The usual technique advocated is to begin the injections near the foot and gradually work upwards; in these cases, however, the most enlarged veins were injected first.

Results of Injection Treatment

The results were very satisfactory, but not all patients were entirely free from some subsequent discomfort, though the relief obtained from their previous symptoms more than compensated them in all but two cases. Examination of the legs after injection showed that in seven there was a slight inflammatory reaction at the site of injection, but no treatment was required and the ordinary daily life of the patient was in no way interfered with. In six patients the reaction was so marked as to necessitate treatment, and it was in this group of six that two patients would have preferred to remain untreated. Three of the six were told to rest in bed, and glycerin and ichthammol was applied. The other three had elastoplast bandages and were told to lead their ordinary daily life.

Four cases of varicose veins of the vulva were treated by injection with very satisfactory results, and in two dramatic relief was obtained from a nearly intolerable pruritus. It was only possible to follow up forty-five out of the sixty patients. No complications occurred in the puerperium, and three had subsequent confinements without recurrence of the condition.

General Discussion

Dr. T. M. HEALY asked why the treatment was stopped in the seventh month, and if there was any reason, obstetrical or surgical, why the treatment should not be adopted in the last two months of pregnancy. Dr. A. H. DAVIDSON, the Master of the Rotunda Hospital, said that the method of treatment described by Dr. Solomons for the treatment of varicose veins in pregnancy seemed to be a great advance. He asked if only quinine and urethane had been used, and said he understood that if the vein was missed when urethane was injected that it gave rise to a lot of pain. He asked if Dr. Solomons had had any experience of sodium morrhuate, and if it was better than, or as good as, quinine and urethane. Dr. O'DONEL BROWNE, Dr. F. DOYLE, Dr. G. TIERNEY, Dr. J. S. QUIN, and Dr. R. M. CORBET also took part in the discussion.

Dr. SOLOMONS, in replying, said that if he saw a case in the eighth month which he thought could be cured by injections in a fortnight's time then he gave a course, but otherwise he only treated patients up to the sixth or seventh month. One of the most severe reactions he had seen was in a case in which he had used sodium morrhuate. Varicose veins of the vulva seemed to respond extraordinarily well to the injection treatment. In patients who had very large veins, especially near term, it was foolish to carry out injection treatment; the treatment then was by an elastoplast bandage. When in any doubt as to whether one was in the vein or not, it was much better to withdraw the needle and to try somewhere else. He only treated patients who were pregnant; patients who had varicose veins and were not pregnant should be sent to a surgeon for treatment.

Pregnancy in Diabetics

Dr. H. V. TIGHE read notes on three pregnancies in a diabetic. The patient came under his care in January, 1935. She was then aged 27, had been married for fifteen months, and was pregnant for the first time. She had been under treatment for diabetes mellitus during the previous four years. Two months before becoming pregnant she had been admitted to hospital in diabetic coma. She was receiving 75 units of insulin daily, and despite this her urine was rarely sugar-free, while her blood sugar remained high. In April, 1935, when thirty-two weeks pregnant, she went into labour. The baby, weighing 4 lb., lived for thirty minutes. Five months later she became pregnant again, and at thirty-two weeks gave birth to a baby weighing 5 lb., which died shortly after delivery. The third pregnancy began two months later, and with a more stringent diet and larger doses of insulin proceeded to thirty-seven weeks, when labour was induced. This last baby when born weighed 8½ lb. and appeared healthy, but died forty-eight hours after birth. At necropsy the cause of death was found to be suprarenal apoplexy.

Dr. Tighe pointed out that insulin has affected the fertility of diabetic patients, and suggested that a definite balance between the pancreatic and other endocrine secretions was necessary to maintain the normal menstrual cycle. There was nothing observed in his case to support the view that the diabetic mother benefits from an additional supply of insulin from the foetus, or that pregnancy produces a lasting exacerbation of the diabetes. While insulin has greatly lowered the maternal mortality, it has not proved so effective in reducing the foetal mortality. The causes of foetal death are poor control of the maternal disease during the later months, hydramnios, congenital abnormalities, and over-development of the foetus. Neo-natal hypoglycaemia following hypertrophy of the islands of Langerhans has also been suggested as a cause of foetal death, but there was no enlargement of the islands found in the third baby at necropsy. Dr. Tighe considered induction of labour a better method than Caesarean section for dealing with dystocia due to the size of the babies. In conclusion he stressed the need of keeping the pregnant diabetic under constant supervision and the necessity of close co-operation between the obstetrician and the physician.

Discussion

Dr. O'DONEL BROWNE said that Dr. Tighe's case illustrated several points common to pregnancy complicated by true diabetes. First, the labours were premature, and in each of the three pregnancies some degree of hydramnios had been present. Secondly, all three children had died. Thirdly, the children (as is usual) had been overweight, and it was therefore fortunate that the labours had been premature. Dr. J. S. QUIN did not agree that there was no objection to a diabetic patient becoming pregnant. Dr. R. H. MICKS referred to two diabetic cases which had been under his care and in which labour had been induced. Both babies had been strong and over the usual weight at birth, and the mothers had done very well.

Dr. TIGHE, in reply, said that diabetes should be treated as a thing quite apart from an associated pregnancy, and the pregnancy should be allowed to proceed normally. Satisfactory results would only be achieved if there was close co-operation between physician, biochemist, and obstetrician. As the children of diabetic women were not likely to be diabetic, there could be no question of sterilization of diabetics on eugenic grounds.

The fifth International Congress of Radiology will take place in Chicago from September 13 to 17, under the presidency of Dr. Arthur C. Christie of Washington. Mr. C. Thurstan Holland of Liverpool is a member of the executive committee, and among the chairmen of delegates for national groups are Dr. Russell Reynolds of London and Dr. R. M. Beath of Belfast. The unity of medicine is the main congress theme, and the integral place of radiology in diagnosis and treatment will be emphasized. More than 250 scientific papers will be read relating to the medical and scientific development of *x* rays and radium.

Local News

ENGLAND AND WALES

Treloar Cripples' Hospital, Alton

On April 29 the trustees of the Lord Mayor Treloar Cripples' Hospital and College entertained members of the honorary medical board at dinner in Barbers' Hall, Monkwell Street. Colonel the Hon. Frederick Lawson was in the chair; he had beside him Alderman Sir Charles Batho, Mr. O. L. Addison (chairman of the medical board), Mr. Maurice Hovenden (Master of the Barbers' Company), Sir Frederick Menzies, Mr. T. J. Harrowing, and Miss Florence Treloar. Colonel Lawson expressed his pleasure and that of his co-trustees in entertaining the medical board, after an interval of eight years, in this City hall, with its ancient associations with surgery. He recalled that a great Lord Mayor of London, Sir William Treloar, was the founder and inspiration of the hospital at Alton, and that other civic dignitaries took part at its birth and had given help since. Under the enthusiastic guidance of the medical superintendent, Sir Henry Gauvain, the trustees had now adopted the widest definition of the word "cripple." Mr. Addison, in his reply to the toast, spoke of the growth of the orthopaedic department during the past ten years and the change in the type of cases now treated. Surgical tuberculosis had become a disappearing disease, he said, largely due to the pioneer work at Alton, hence the enlargement of the scope of the hospital and college. Treloar, with Coram and Barnardo, would go down to posterity as three great benefactors of children. The toast of "The Corporation and the City of London" was submitted in happy terms by Sir Henry Gauvain, who paid warm tributes to his colleagues; and Sir Charles Batho, in reply, spoke of the pleasure it had given him when Lord Mayor to help forward the work begun by William Treloar. Sir Charles Gordon-Watson, proposing the health of the Worshipful Company of Barbers, said that it was a privilege to do so in that beautiful and ancient hall, whose possessions made him almost regret the severance of the surgeons and the barbers in 1745; "for 400 years the barber-surgeons were the foster-mother of our craft." The Master, in his acknowledgement, showed the cup given to the Company by Henry VIII, and other pieces of priceless plate.

The Tuberculosis Association in Manchester

The annual provincial meeting of the Tuberculosis Association will be held in the Central Library, Manchester, on Thursday, Friday, and Saturday, June 10, 11, and 12, under the presidency of Dr. S. Roodhouse Gloyne. The provisional programme is as follows: June 10 (joint meeting with the North-Western Tuberculosis Society): 2.15 p.m., papers on "How Long Should Collapse Therapy be Delayed?" by Dr. Geoffrey Marshall and Mr. H. Morriston Davies; 5 p.m., paper on "Bronchiectasis in Pulmonary Tuberculosis," by Mr. J. E. H. Roberts; on "Pleural Effusions after Thoracoplasty," by Dr. O. M. Mistal; 6.20 p.m., annual meeting. June 11, 9.45 a.m., papers on "Reflections on the Treatment of Unilateral Pulmonary Tuberculosis," by Dr. P. J. L. De Bloeme; and on "My Chief Difficulties in Dealing with the Tuberculosis Problem," by Professor A. Ramsbottom (consulting physician), Dr. W. F. Jackson (general practitioner), Dr. A. Dove Cormac (medical superintendent of a mental hospital), Dr. R. E. Lane (medical officer to a large factory), and Dr. D. P. Sutherland (tuberculosis officer); 2.15 p.m., visit to Manchester Sanatorium, Baguley; 7 p.m., president's reception and annual dinner at Midland Hotel. June 12, 10 a.m., papers by Dr. J. B. McDougall on "The Use of the Tomograph"; by Dr. C. D. S. Agassiz on "Artificial Pneumothorax in Children"; 12 noon, problem cases presented by Dr. E. H. A. Pask and Dr. G. Jessel. In the afternoon members will be welcome at the Liverpool Sanatorium, Crossley Sanatorium, Barrowmore Hall Colony, Abergele Sanatorium, and the Manchester Tuberculosis Office and Clinic, 352, Oxford Road, which will be open to members throughout the conference from 10 a.m. to 4 p.m. daily. Members of the North-Western Tuberculosis Society and their friends will be welcome at all the meetings, the annual dinner, and the excursions. Full information may be obtained from the honorary secretary, Tuberculosis Association, 26, Portland Place, London, W.1.

Coroners' Inquests in London

During 1936 the number of deaths reported to London coroners was 8,748 as compared with 8,209 in 1935. Of these deaths 3,343 occurred in mental hospitals and other institutions. Inquests were held in 3,180 cases as against 3,239 in the previous year. The total number of suicides was 583. Three suicides were under 17 years of age and 171 were over 60. Deaths from want of attention at birth decreased from forty-two to twenty-five. The number of people who met their deaths by accident was 1,622 as against 1,766 the previous year; thirty-six deaths resulted from injuries and forty-eight from drowning. A verdict of "Death from natural causes" was returned in 568 cases and there were eight verdicts of "Cause of death unknown." In nine cases a verdict of murder was returned, and in one case a verdict of manslaughter. Three inquests were held in connexion with executions. Inquests on newly born children decreased from fifty-five to forty-seven. Three verdicts of murder of newly born children were recorded. Sixty-six deaths were attributed to excessive drinking. The coroner directed post-mortem examinations to be made in 2,578 cases, or 81 per cent., of the inquest cases, and in 3,413, or 61.3 per cent., of the remaining cases in which it was decided that no public inquiry was necessary.

SCOTLAND

Hospital Treatment of Infectious Disease

In his annual report for the year 1936 Dr. C. Barclay Reekie, medical officer of health for the burgh of Dunfermline, urges the importance of wide floor space in hospitals for the treatment of infectious disease. With regard to scarlet fever, he says that apart from the natural decline in the severity of this disease, which some authorities had attributed to the segregation in hospitals over a number of years of the more severe cases and the introduction of scarlet fever antitoxin, the diminution of complications had been largely due to improved ward environment. Overcrowding of wards instead of being economical resulted in an increased number of septic infections with protracted stay in hospital. The number of scarlet fever cases treated in the West Fife Infectious Diseases Hospital at Dunfermline had been 202 during the past year, a decrease of 360 cases on those of the previous year. Discussing diphtheria the report states that there is a tendency to send cases earlier to hospital. In the analysis of fatal cases of diphtheria it had been found that the shortest period any patient had been ill before coming into hospital was three days, and this illustrated the serious effect of delaying the giving of antitoxin and the provision of skilled nursing. The number of cases of diphtheria admitted to this hospital had been 182, a decrease of 83 on those of the previous year. There was an increasing demand for the admission of cases of measles. It was not generally recognized that measles had a high mortality between the ages of 6 months and 1 year, so that the

problem of measles was not so much prevention of the occurrence of the disease as its postponement to the later years of childhood.

Simpson Memorial Maternity Hospital

At the annual meeting of the Edinburgh Royal Maternity and Simpson Memorial Hospital the hope was expressed that the Royal Infirmary of Edinburgh would be able to take over the hospital, which is now approaching completion in the Infirmary grounds, by November, 1938. It had been necessary to transfer £3,520 from the reserve fund to meet working expenses, but receipts from legacies had showed a satisfactory improvement from £3,400 to £8,276. A subscription income of at least £4,500 was required for the hospital until the time when it could be taken over by the Infirmary. Reference was made to the fact that the municipal authorities had insisted that the new building should be constructed of natural instead of synthetic stone as had been intended, and this had involved an added expenditure of £7,000 which, it was suggested, the Corporation should provide. The number of cases treated last year had been 3,393, and there had been 10,883 attendances at the ante-natal clinics, of which 2,358 were of new cases.

Correspondence

High Hyoscine Dosage in Chronic Encephalitis

SIR,—Sir Arthur Hall's paper in the *British Medical Journal* of April 17, on "The Results of High Atropine Dosage in Chronic Epidemic Encephalitis," records that the highest dose of atropine given was 54 mg. daily. The following describes briefly a case in which we have used nearly four times this dose (up to 195 mg. daily) to secure symptomatic relief from oculogyric crises.

Miss X, aged 28, had an acute attack of encephalitis, regarded as "influenza" in 1924. In October, 1928, advanced Parkinsonism was present, with the tremor and rigidity more marked on the right side. She could not walk without help, and had to be assisted with changing her clothes and in eating; there was no gross mental change. Oculogyric crises were, however, her most distressing complaint. She was given a course of tryparsamide injections and genoscopolamine pills. Considerable improvement followed. In August, 1933, she was taking, in addition to six genoscopolamine pills daily, a mixture containing tinctura belladonnae 15 minims and tinctura stramonii 15 minims twice daily; the latter was gradually increased until 1 drachm was given in each dose of her mixture, and this was continued until September, 1936, when oculogyric crises were so severe and distressing that hypodermic injections of hyoscine were commenced, at first in small doses (3 to 5 mg.). The dose was gradually increased until in December, 1936, she had 1 grain (65 mg.) and occasionally 1½ grains (97 mg.) morning and night (that is, a total of 130 to 195 mg. daily). Any reduction of the dose below half a grain morning and night caused a return of intensely distressing oculogyric crises, and even with the larger doses mild attacks still occur morning and evening. Dryness of the mouth has never been a troublesome feature during the administration of these large doses, nor have any gastro-intestinal, urinary, or mental symptoms appeared. Mydriasis is controlled by instilling two drops of a 1 per cent. solution of eserine into the eyes morning and night.

We have been unable to find any recorded case in which comparable doses of hyoscine have been given therapeutically over prolonged periods.—We are, etc.,

HENRY COHEN,
Liverpool.
JOHN W. CRAW,
Northwich.

April 28.

Blood Transfusion in Obstetrics

SIR,—May I make brief comment upon two or three points arising out of Dr. Malcolm D. Black's paper in the *Journal* of May 1 (p. 903). Dr. Black states that "if blood will be available within half an hour to one hour, or if the patient be at the point of death [as a result of haemorrhage], it is better to start giving an intravenous saline injection and to continue it until blood has been secured." . . . "Patients have died within half an hour of admission. An intravenous saline injection can be started within ten minutes of admission, and blood transfusion could be started in the same time if blood were kept in storage."

I maintain that an immediate intravenous infusion is essential without waiting for the patient to be "at the point of death" whenever the systolic blood pressure falls to 80 mm. Hg, or fails to rise above 90 mm. Hg after routine nursing measures have been taken. Crystalloidal saline solution is not very satisfactory for this purpose, and when whole blood is not immediately obtainable I have found an ephedrine-glucose-gum preparation to be the most satisfactory substitute at present available (*J. Obstet. Gynaec. Brit. Emp.*, 1935, **42**, 852; *British Medical Journal*, 1936, **2**, 537). The ephedrine is omitted in cases of shock. Sometimes blood transfusion is required later, but in many cases, especially those of accidental haemorrhage, the simple infusion will suffice.—I am, etc.,

Newcastle-upon-Tyne, May 1. WM. HUNTER.

SIR,—Dr. Malcolm D. Black (*Journal*, May 1, p. 903) seems to strain at a gnat and swallow a camel when he states, ". . . cutting down on to a donor's vein should never be permitted," and goes on to say, ". . . cutting down on to the recipient's vein is always advisable. . . ." One can quite well understand acute dilatation of the heart being included under the heading of "dangers" when it is stated that ". . . twenty minutes at least should be taken in introducing 600 c.cm. . . ."

I venture to suggest that the gravity method of blood transfusion is obsolete, and when used is sheer cruelty to the nurse who stands with arms aloft; perhaps the twenty minutes is the time limit of her endurance!

It is a simple matter in the most collapsed of patients to introduce a 17 gauge hypodermic needle even in the dorsum of the hand, for argument's sake, and to deliver the citrated blood at one's ease by means of a two-way syringe; personally I use a "Rotanda": the small bore of the needle forces one to give a slow transfusion—one hour and twenty minutes will not be ill-spent in giving 600 c.cm. of citrated blood! With regard to the mixing of the blood with the citrate solution, I have found a sterilized Horlick's malted milk glass and mixer of great value.—I am, etc.,

Longtown, Cumberland, May 2. R. RUTHERFORD.

Bran in the Prevention of Constipation

SIR,—Having advocated the use of a "processed" preparation of bran as the best remedy for nearly all ordinary cases of habitual constipation (*Practitioner*, 1935, **135**, 229; *Med. Press and Circ.*, 1935, **191**, p. 336), and also to some extent as a preventive of chronic catarrhal colitis, I was most interested on reading confirmatory evidence in Dr. E. M. Dimock's paper (*Journal*, May 1, p. 906). By retaining moisture the bran tends on the whole to make the contents of the rectum somewhat softer in constipated subjects, and does not "scrape" any

portion of the alimentary canal if taken with milk, soup, or fruit juice.

Recently, however, I read an article on colitis by a well-known medical authority on diet, in which he stated that if persons insisted on taking bran for spastic constipation it was no wonder that they should suffer from colitis. It seems to me that this question regarding the action of bran in spastic constipation depends on the amount of bran taken and whether it is taken during an attack, or exacerbation, or at other times.

All useful agents can in excess—or in relative excess, as a result of temporary or permanent over-sensitiveness or idiosyncrasy—also become harmful.—I am, etc.,

London, W.1, May 1. F. PARKES WEBER.

Angina Innocens

SIR,—After reading the paper on angina innocens by Dr. Geoffrey Bourne (*Journal*, April 3, p. 695), a recent case of mine appears to be an instance of this condition.

An American lady, aged 37, was awakened from her sleep by a severe pain in the left precordial area, which quickly radiated into the left shoulder and down the left arm into the fingers. She felt that she was being suffocated. The attack lasted for about fifteen minutes and passed off. This was followed by a series of similar attacks, each lasting between ten and fifteen minutes, with an interval of about half an hour between the attacks. Throughout this time she remained in bed.

I first saw her about three hours after the first attack. When I entered the room she happened to be in an attack. She appeared very shocked, and seemed to be suffering great pain. No cyanosis was present. The heart was not enlarged; it was regular in action, and the sounds were normal. The pulse rate was 58 a minute; blood pressure was 100/60 mm. Hg. Nothing abnormal was found in the lungs or abdomen. She gave no history of any previous attacks, but she had had influenza a short time previously.

Inhalations of amyl nitrite failed to relieve the condition, but after two injections of morphine she became free from pain and fell asleep. After some hours she wakened, and apart from a feeling of soreness in the left arm she had no pain. After two days in bed without any recurrence of pain she refused to remain in bed any further. Her blood pressure remained at 100/60 mm. Hg and the pulse rate was 62. The soreness in the left arm, however, was still present. That evening she got up and went ashore in Havana visiting Sloppy Joe's (internationally famous bar), where she consumed numerous rum drinks. She then visited several cabarets, finally returning to the ship at five in the morning. I saw her later in the day, and apart from the soreness in the left arm she was free from any discomfort. The heart and blood pressure were unaltered. She carried on in her usual manner, including drinking and dancing, for another week, when she left the ship. No signs of any pain had been felt, and the soreness of the left arm had passed away.

I feel that this case is an example of angina innocens, as described by Dr. Bourne.—I am, etc.,

R.M.S. *Empress of Australia*, April 30. ERIC F. D. OWEN.

Prontosil in Septic Parotitis

SIR,—A further important use for prontosil appears to lie in the treatment of septic parotitis, a condition notoriously difficult to treat in mental hospital patients. I saw a case of this kind with Mr. Terry, senior surgeon of the Royal United Hospital, Bath. The patient appeared to be in an ominously poor state. The external and internal swelling was very considerable, fetor was marked, and a minimal elevation of temperature seemed to indicate the poor reactive potentialities of the individual concerned; 5 c.cm. of prontosil with two oral tablets daily were administered. Well within twenty-four hours of the injection the patient's condition was considerably better. Recovery was uneventful. The tablets were discontinued on the tenth day, but before that day amelioration of the condition was very obvious. This minimal dosage by the intramuscular route was to some degree determined by difficulty in estimating the kidney tolerance of prontosil owing to inability to obtain specimens because of the patient's condition in relation to such matters.

In view of the depressing results of treatment of septic parotitis in mental cases this further extension of the usefulness of the new drug seems of undoubted importance.—I am, etc.,

A. GUIRDHAM, M.A., D.M.

Bath, April 28.

Inhalational Therapy

SIR,—So many points are raised in my mind by the letter of Sir H. B. Fawcus (April 17, p. 837) that I will deal with the chief of them as I read his letter.

In his opening he claims to be a trustee for the Duke-Fingard inhalational treatment. It would be of interest if he would inform us of what his trusteeship consists, and when and where the exact formula of this inhalation has been published, since, so far as I know, it is not generally known (see leading article, *British Medical Journal*, January 23, p. 175).

Putting aside his statement that he has been conversant with this particular form of therapy for so short a time as two years, he states that he is quite convinced of its undoubted value in selected cases. I would point out that my patient was accepted as a suitable case apparently by one of their own selected list of doctors. Further, anent the question of "selection," I quote the concluding paragraph of the article in the *Practitioner* of November, 1936:

"All the cases have been taken indiscriminately as they have applied for treatment. No case has been rejected on any medical grounds, no matter how hopeless it appeared to be. Practically all have been chronic cases, which have refused to respond to any other kind of treatment previously tried."

Sir H. B. Fawcus next remarks that he is well aware of the ethical policy which has been adopted in every instance. May I remind him that an ethical policy which permits the appropriation of another practitioner's patients is not one acceptable to the majority of his profession. It is true to say the patient is handed back after being drilled in the merits and applicability of this form of treatment to his own case.

We next pass on to a larger paragraph from which we may readily be led to a quibble over words. Surely Sir H. B. Fawcus will agree that for the purpose of advertisement it is not essential that the matter shall appear in the strict advertisement columns and be so labelled. The science of advertisement is far too subtle for such restriction, and I can only tell him that my patient took his first step in the direction of treatment by reason of what he read in a lay Sunday paper. Evidently particular objection to the statement that my patient was "referred" to a medical man is taken by Sir H. B. Fawcus, who, so far as I can interpret his words, immediately proceeds to tell us how patients are referred under his ethical policy. I will be glad to withdraw my form of expression if a satisfactory explanation of any error is forthcoming.

In his concluding paragraph Sir H. B. Fawcus has read much more into my words than can be reasonably implied. Nowhere do I refer to the "abrupt" change in temperature, for I am assuming that my patient, being an intelligent person, and having received such specific directions about the danger of "abrupt" change, would have carried out those directions. My assumption here may be unwarranted, for neither in the article in the *Practitioner* of November, 1936, nor in the letter I received from the doctor who saw my patient in London, is mention made of the need for such precaution. On the contrary, I quote the following abstract from the doctor's letter to me:

"I have found it advisable to commence treatment with three hours of the inhalation on the first day, and if this is tolerated well by the patient to increase by three hours a day to a maximum of sixteen hours. As you will see this is an ambulatory treatment and the patient is able to carry on his or her normal occupation during the day. Any local or general treatment you think fit should, of course, be used in conjunction with the inhalation."

Proceeding further, I fail to find any suggestion in my letter that the adverse result was due "partly to the inhaled vapour." Had Sir H. B. Fawcus read my letter carefully he would have noted that I described the early improvement in my patient's condition, and later the onset of an "acute" bronchitis. He can take it from me that the ill effects were quickly apparent even to an untrained person, and that I took good care to modify the patient's treatment on well-established principles to the exclusion of any further exposure in the medicated room. The final sentence of this paragraph I would amend by the addition of two words so that it reads: "Obviously one cannot merely switch on the specialist and leave the rest to the machine."

Finally, I would like to express my thanks to Dr. A. C. Greene for his helpful suggestions in the management of these cases. I would only suggest to him that there may be a danger to the chilly race of bronchitics in providing too thorough aeration, and that Nature may have some measure of wisdom in her method of restricting access to the lungs.—I am, etc.,

Runcorn, April 21. N. A. BOSWELL.

Hermaphroditism

SIR,—Mr. Harold Chapple's case of hermaphroditism (*Journal*, April 17, p. 802) can hardly be used to justify the conclusions of his article. What competent endocrinologist believes that the gonads *per se* determine the sex of an individual? In the case of a woman the ovaries are known to play a determining part in the sexual cycle, but for the sexual type as a whole the general glandular structure and function are responsible. While it is true that the hereditary formula of the ovum is the origin of the sexual type and of the glandular function, the latter's development becomes dependent on environmental conditions of many kinds, and most certainly does become responsible to a great extent for the sexual characteristics. Before Mr. Chapple ventures to criticize emphasis laid on the significance of the gonads, he should surely pay due recognition to the all-important part played by the whole adrenal-pituitary-gonad complex in the sexual behaviour of an individual!—I am, etc.,

London, April 28. R. L. WORRALL.

SIR,—I was interested in Dr. Harold Chapple's report of an unusual case of hermaphroditism in the *Journal* of April 17 (p. 802). I do not agree with his statement that this case proves that the sexual characteristics of the individual are independent of the gonads. Although the organ which was removed from his case presented the typical appearance of an atrophied testicle, yet microscopical examination showed that interstitial cells of the intratubular stroma were greatly developed. Is it not highly possible, then, considering the general features of the case and the bisexual organs, that these interstitial cells, although situated in an apparent testicle, were secreting ovarian hormone. The overgrowth of these cells would probably account for the patient's sexual desire and intense feelings.

Previous experiments point very strongly to the fact that, had the adenomatous interstitial cells been secreting the male hormone, then she would have exhibited definite masculine characteristics. The removal of one of these organs lessened the patient's sexual ardour, which indicates that some endocrine activity in the glands directly affected her sexual life.

I have in my possession the gonads of a frog. One of these organs is a typical testis, while the other is composed partly of testicular substance and partly of the mottled ovarian tissue.—I am, etc.,

London, W.2, April 19. C. HOWICK-SMITH.

Birching of Children

SIR,—It is important for those who advocate whipping as a justifiable corrective for the behaviour of children to realize that a very large element of sadism is responsible for this advocacy. Psychologists are universally agreed that no child should be whipped. When this latent sadism is realized people no longer desire to whip children and no longer think that it is good for them. It may not, in some cases, do much harm—there are so many ways, means, and circumstances—but it can never do them any good and often does much damage. Dr. J. S. Clarke (*Journal*, May 1, p. 941) is mistaken, although I am sure quite sincerely, in his belief that children are improved by whipping, and unfortunately many medical men appear to think likewise and will do so until a knowledge of psychology and of themselves is acquired. It has surprised me how few psychologists have contributed to the discussions on whipping in this *Journal*.—I am, etc.,

London, W.9, April 30. G. W. GARDE.

SIR,—Surely the results of birching children are of far greater importance in helping a decision! Dr. W. N. Maple has placed several facts before us in his letter in the *Journal* of April 17 (p. 837). He deserves applause. Since judicial birching apparently does so little good, why not let the psychologists see what they can do before condemning them and their methods?—I am, etc.,

Norwich, May 2. MILLAR PAGE.

SIR,—Whilst on the whole agreeing with your excellent leading article on the birching of children, I think it is very undesirable to spoil a good case by overstatement. I do not believe that children of 8 are birched; I do not believe that a child is tied up to a tripod whilst receiving its punishment; nor do I believe that the birch is soaked in brine. I have the support of chief constables of experience in this. For example, the Chief Constable of Brighton says he has never heard of brine-soaked birches, and the Chief Constable of Hove (who by the way states

that no child has been birched in Hove since 1923) says no tripod would be used if the necessity arose for whipping a child. Perhaps you will indicate what authority there is for the statements on this matter made in your leader.—I am, etc.,

Hove, April 23. L. A. PARRY.

*** The method of tying the offender to a kind of tripod was described by the Earl of Kinnoull in a speech in the House of Lords on July 25, 1933 (Parliamentary Debates, House of Lords, Official Report, vol. 88, No. 77, col. 1083), and his statement was neither refuted nor challenged. The soaking of the birch in brine to prevent the twigs from splitting is so well established that phrases such as "a rod in pickle," etc., have long been in common usage. According to a report in the Press (*Daily Herald*, March 4, 1935) a 13-year-old boy who was sentenced at Newport (Mon.) to six strokes of the birch had to wait four days for his punishment because the only available birch was too dry. On March 2, 1937, the same newspaper reported that a 9-year-old boy at South Shields had been ordered six strokes of the birch, which left weals across his ribs and across an appendicitis scar; an effective complaint about this case was made to the Home Office by Mr. J. Chuter Ede, M.P. The procedure of birching may vary in different parts of England and Wales; but the method described by Lord Kinnoull and discussed in our leading article is undoubtedly practised in many places other than Brighton and Hove. It is satisfactory to know that a Departmental Committee is about to consider the whole question, and we may assume that all documents relating to the orders given by magistrates for such punishment and the details of its administration by the police will be in the hands of that Committee.—ED. *B.M.J.*

Origin of the Westmorland Consumption Sanatorium

SIR,—On account of my absence in South America throughout the winter I did not see until this week your obituary notice of my late friend Dr. W. S. Paget-Tomlinson in the *Journal* of February 20, in which you say:

"One of his most ambitious and valuable endeavours was the establishment of the Westmorland Sanatorium for Consumption at Meathop. His partner in this was Dr. W. R. Parker of Kendal. . . . There was no such sanatorium for the poor at that time in England; the Meathop institution was the pioneer. He was intimately associated with its activities and its development, towards which he was a liberal contributor, and he was its president at the time of his death. It was opened by the late Lord Derby in 1900, and it stands as a permanent memorial to the foresight and public spirit of Dr. Paget-Tomlinson.

Please allow me to supplement this. When sixty years ago I was a medical student at University College I was much impressed by several articles in "The Manchester Science Lectures" on the connexion between stuffy air and consumption. In 1883, while travelling about New Zealand for the Government Insurance Company, I was struck by the absence of consumption, and attributed it to the necessary ventilation of the universal wooden houses due to ill-fitting boards, and I reported this opinion to the New Zealand Government. On March 9, 1887, there appeared in the *British Medical Journal* a letter by me suggesting that if stuffy air was a cause of consumption in animals, why not apply this to man and abolish consumption by open-air treatment? In 1898 the *Practitioner* published two special numbers on tuberculosis. I studied these with great avidity as confirming views which I had long held and supplying me with many new arguments. I immediately wrote sixteen consecutive articles in the weekly *Westmorland Gazette* under such headings as "Consumption Preventable," "Consumption Curable," "How to Prevent Tuberculosis in Cattle," etc. Failing to get any adequate support, I wrote to Dr. W. S. Paget-Tomlinson, at that time a stranger to me, but just then president of the Westmorland Agricultural Society, and he immediately backed me up warmly. We met nearly every week for months, and through his influence were supported by numerous influential people, and by March, 1900, our sanatorium was opened by the late Earl of Derby.—I am, etc.,

WM. RUSHTON PARKER, M.A., M.D.

London, April 25.

Obituary

GEORGE PARKER, M.A., M.D., LL.D. (HON.)

Consulting Physician, Bristol General Hospital

On April 27, at his residence in Clifton, Dr. George Parker died in his eighty-fourth year after a long illness. Born at Claverdon Hall, Stratford, he was educated at Cambridge House, Stratford-on-Avon, and at St. John's College, Cambridge, where he took honours in two triposes, moral sciences and history, proceeding to the B.A. degree in 1877. For a time he remained in Cambridge as a coach for the Moral Sciences Tripos. He then passed the first and second examinations for the M.B. degree and continued his medical studies at St. Bartholomew's Hospital. He graduated in medicine in 1884, taking the M.D. degree without the preliminary M.B. because he had already taken his M.A. in 1880.

He held the appointment of resident medical officer at the Paddington Green Children's Hospital, and after a period of study in Vienna settled to practise in Bristol in 1887 with an appointment as medical officer to the Bristol Dispensary. In 1892 he was appointed assistant physician, and in 1901 became physician to the Bristol General Hospital: for a time he took charge of the newly founded electrical department in that hospital. For many years he was lecturer in medical jurisprudence in University College and the University of Bristol. He was an active member of the British Medical Association, was president of the Bath and Bristol Branch in 1911–12, and for several years was a member of the Central Council and of the Representative Body. He also held the office of president of the Association of Physicians of Great Britain and Ireland in 1924 when that association met in Bristol.

Dr. Parker was President of the Bristol Medico-Chirurgical Society in 1915–16 and honorary medical librarian to the University of Bristol from 1930 up to the time of his death. During the war he was on the *à la suite* staff of the Second Southern General Hospital (T.F.) in Bristol, with the rank of major and subsequently lieutenant-colonel.

As a physician Parker was cautious, sound, and widely informed. As a teacher he was clear, impressive, and interesting. But it was as a medical historian that he gave his talents their fullest play. His *Early History of Surgery in Great Britain* was incomparably the best account that has been written. His researches revealed

many facts previously unknown; his erudition was great and his accuracy in tracking information to its earliest sources was amazing.

With all his learning Parker never became pedantic: history in his hands always took the form of a coherent and entertaining story. His knowledge of the medical history of Bristol was inexhaustible. He compiled lists of physicians, surgeons, and apothecaries who had practised in Bristol from the earliest times, and ferreted out their biographies with infinite zest. Correspondents from all over the world would write to Parker for information about Bristol practitioners from the Middle Ages to modern times, and whatever there was to be known about them he had their records and shared his knowledge freely and generously. In 1933 Parker wrote a history of the Bristol Medical School for its Centenary, and the account he then compiled of the earliest schools of anatomy, surgery, and medicine in Bristol was a pattern of exact documentation and admirable illustration. He hunted out the history of the old monastic hospitals in Bristol and identified their sites. In his later years he was associated with Sir Flinders Petrie in exploration in Palestine and the Near East, where he acted as medical officer to the expeditions. In 1927 he delivered the Vicary Lecture at the Royal College of Surgeons on "Early Hospitals." In 1934 the University of Bristol, in recognition of his labours as a University lecturer, as honorary medical librarian, and as the chronicler of Bristol medical history, conferred on him the honorary degree of LL.D.

George Parker was the most modest of men; kind, courteous, and companionable, he was a universal friend and will be deeply mourned. Deep sympathy is felt with his sister, Mrs. Stokes.

J. A. N.

JOHN WALDY, F.R.C.S.

Mr. John Waldy of Green Park, Darlington, died on April 25 at the age of 76. He was the eldest son of the late Mr. Edward Waldy of Barmpton, near Darlington. He was educated privately, and joined the Medical College at Newcastle-upon-Tyne (Durham University) in October, 1877, where he acted for some time as assistant demonstrator of anatomy. He passed the primary examination for the F.R.C.S. in May, 1880, being one of a batch of the first five students to do so without being coached in London. In October, 1881, he went to St. George's Hospital, and became M.R.C.S. in 1882 and L.R.C.P. in 1883. He acted as assistant medical registrar at that hospital. In 1887 he was admitted a Fellow of the Royal College of Surgeons. He was from 1883 a house-surgeon, and later senior house-physician, at the Royal Victoria Infirmary, Newcastle, for four years, being the last resident to be appointed without a time limit. Sir George Hare Philipson was then the senior physician of that institution, and many are the droll stories Waldy could tell of that quaint personality. On leaving the Infirmary he joined Dr. John Hanley Hutchinson at Catterick, and they soon had a most extensive practice in North Yorkshire, requiring at one time eleven or twelve horses to run it. Waldy had often to leave home at 8 or 9 a.m., drive a tandem himself, and not return home from his "round" until late in the afternoon. Hutchinson had been a contemporary of Sir William Gowers as a student at University College, and was a physician of great ability.

About thirty-five years ago Mr. Waldy moved to Darlington as a consultant surgeon, and enjoyed the confidence of the people and doctors of Darlington and district for many years, though he did not hold any hospital appointment. In 1930 his sight began to fail, and four years ago other painful diseases developed, and he had been confined to bed constantly for the last year and a half. The end came suddenly, and he was buried, after being cremated, in the family burial ground beside his first wife, who died in 1930, in the churchyard of Haughton-le-Skerne. He leaves a widow, but no children.

He was of a gentle and retiring disposition, and kind to rich and poor alike. His methods were slow and somewhat hesitating, but most painstaking and thorough. It was these two last qualities which gave his patients such complete confidence in him. He cared nothing for society or sport. His leisure hours, which were few, were spent at home. He was a student all his days, being interested in medicine as well as in surgery. He was a teetotaller and a non-smoker, and was very fond of horses and dogs, often saying that if he had not been a doctor he would have been a farmer. He was a member of the British Medical Association for many years.

W. R.

T. G. MACAULAY HINE, M.A., M.D.

Thomas Guy Macaulay Hine, who died on April 25 aged 66, was the son of the late George T. Hine, F.R.I.B.A., consulting architect to the Royal Commission in Lunacy, who built some of our largest asylums, including Claybury. Dr. Hine was educated at Charterhouse, King's College, Cambridge, and St. Bartholomew's Hospital, graduating M.B.Cantab. in 1904, and became house-physician to Sir Norman Moore. He then took up bacteriology, and did some research work on the group of organisms that includes the diphtheria bacillus. Possessed of a competence, he was able to follow his own bent during the following years, but in 1915, during the first winter of the war, Hine's services were invited as officer in charge of the Central Laboratory that had been formed at Millbank to deal with outbreaks of cerebro-spinal fever among troops. Hine, who was a trained engineer as well as a doctor, thoroughly entered into the work; devised, set up, and presided over a medium-making department; prepared, standardized, and sent out suspensions of meningococci of various types and agglutinating sera; and latterly distributed specimens of monotypical serum specially prepared for therapeutic trial, and assessed the results in a special report. He took over the problem of the mass disinfection of the nasopharynx in meningococcus carriers, and designed a special jet that was operated by steam or compressed air and was particularly effective in keeping the air of inhaling rooms charged with droplets of a 1 in 50 solution of zinc sulphate. In this way an efficient N.C.O., by making his men inhale the atmosphere vigorously through the nose while in the inhaling room, could free them temporarily of the meningococcus. Although the meningococcus in most cases gradually returned, the treatment was useful in reducing the abundance of the meningococcus in droplets expelled during the night into the air of Army huts, when carried out last thing, and so helped to check the spread of the disease.

For his services during the war Dr. Hine received the O.B.E. and was given the honorary rank of major. During recent years he had lived in retirement in Devon. In 1918 he married Miss Margaret Lillywhite, who survives him with a son aged 16 and a daughter. His sister, Mrs. Coxon, is the well-known novelist Muriel Hine. At one time Dr. Hine was Master of the Fruiterers Company, and he was a popular figure in lay as well as medical circles in the City of London and elsewhere.

M. H. G.

DR. ARCHIBALD DONALD

Dr. Judson S. Bury sends the following tribute: Archibald Donald was one of my dearest, oldest, and best of friends, and having shared in his happiness and his sorrows, and rejoiced in his successes and honours, I should like to say something of his personality and character, even though my words can only be an echo of the sentiments so admirably expressed in the *Journal* of April 24 by other colleagues. They have given just testimony to the originality of his pioneer work in gynaecology, to his operative skill, and to the many advances he introduced in the technique of treatment. There can indeed be no question that Donald's work has had a powerful stimulating influence in the development of gynaecology in this country. Above all, his colleagues lay stress on his reticence in referring to his own discoveries. One instance of this reluctance to speak of his own work is seen in his Lloyd Roberts Lecture, entitled *The Transition*. I have just reread it, and although there is ample acknowledgement of the investigations of his colleagues I can find no reference to his own. Modesty was certainly one of his most characteristic features, but behind this modesty those who knew him well realized that there was a strong personality, a transparent honesty of purpose, a well-balanced mind, and a kindly judgement of others; moreover, he had the saving grace of humour and an unostentacious generosity. He was constantly doing kindly actions, unwearied and indefatigable in his labours for his patients and his students, taking infinite pains both in the treatment of patients and in his teaching. His extreme solicitude for the welfare of others was outstanding. His example and his lovable disposition gave him an influence which is woven into the lives of his disciples and his friends. To few has been given a life so fully and so nobly wrought. Can it be wondered that he was so greatly loved, so profoundly respected by all who knew him? His last lingering illness was borne with the greatest fortitude and resignation. It is good to know that the end came in his beautiful country home, to which and the fine garden he was so much attached. When a few days later we gathered round his resting place in the graveyard of the church at Nether Alderley we knew that we were bidding farewell to an English gentleman of old-world courtesy, and it was sad to think that never again should we be able to see his charming smile or listen to the gentle wisdom of his observations. No kinder eyes have ever been sealed by the dust of death. I believe that Donald would have been willing to say of himself:

> I have loved no darkness,
> Sophisticated no truth,
> Nursed no delusion,
> Allowed no fear.

We shall cherish of him a memory that will always be green, especially to those who knew his humanity and esteemed his sterling worth.

Dr. JOHN AUGUSTUS SPEAR died at Guildford on April 15 at the age of 65. He was the son of the late Dr. J. Spear, a distinguished inspector of the old Local Government Board, and received his education on the Continent and then at St. Bartholomew's Hospital. Shortly after qualifying as M.R.C.S., L.R.C.P. he took up an appointment in Brazil with the St. John Del Rey Mining Co., and was for many years British Vice-Consul for the State of Minas Geraes. J. G. F. H. writes: By the intimate friends of the late Dr. J. A. Spear a lasting sorrow will be felt for the loss of one whose strong personality must have left an indelible impression on all with whom he came in contact. His brain power was far above the average, which enabled him to pass the primary fellowship examination with unusual ease. That he never proceeded to the final examination was mainly due to his foreign career, and in some degree to administrative duties which absorbed his attention for many years. Humanity itself meant more to him than its ailments. An avid reader, he was familiar with the best of English literature, and his retentive memory and happy mode of expression made him an ideal companion. Pomp, ceremony, and the vanities of this world were to him things of nought. His enduring interest lay in his books and in the hope of finding therein a solution of the problem of the universe which has for ever baffled mankind. Games did not interest him and he had no real heart for field sports, killing being repugnant to his nature. In his younger days his physical energy and impatience at delay earned him the wholesome respect of the native and European population with whom he had to deal. His fiercest tirades were more often than not a prelude to some act of pure philanthropy, and his outspoken criticisms lost their sting as the underlying sense of humour came to light. He leaves behind him a devoted wife, and to her all his friends will extend their sympathy.

Dr. ROBERT SPIERS FULLARTON, who died after a short illness at Helensburgh on April 17, was formerly professor of physiology at Anderson College and a divisional medical officer of health in Glasgow. The eldest son of Colonel John Fullarton of Kilmacolm, he was born in 1867, and graduated M.A. of the University of Glasgow in 1886. After some years he took up the study of medicine, and obtained the M.B. and Ch.B. degrees with honours in 1898, proceeding M.D. in 1911. Meanwhile he had been elected a Fellow of the Royal Faculty of Physicians and Surgeons in 1903, and afterwards took the D.P.H. of Edinburgh and Glasgow. For some years Dr. Fullarton was resident assistant physician at the City of Glasgow Fever Hospital, and later acting superintendent of the City of Glasgow Small-pox Hospital. With Dr. R. S. Thomson he published statistics relating to vaccination and small-pox in the last-named institution between April, 1900, and June, 1901. He joined the British Medical Association in 1914, and was honorary secretary of the Section of Public Health at the Annual Meeting in Glasgow fifteen years ago.

We regret to announce the death of Dr. FRANCIS MURRAY HAIG, which occurred at his home in Woking on April 22. He was the second son of Major-General F. T. Haig, R.E., and studied medicine at the University of Cambridge and St. Thomas's Hospital. He took his M.A. in 1882 and qualified as M.R.C.S. and L.S.A. in 1885, proceeding to the M.D. and B.Ch. degrees in 1887. Dr. Haig had held the posts of house-physician at St. Thomas's and honorary medical officer to the Woking Cottage Hospital and St. Peter's Convalescent Home. For some years he was in active ophthalmological practice in the Midlands, and was elected ophthalmological surgeon (afterwards consulting surgeon) to the Coventry and Warwickshire Hospital. He had been a member of the British Medical Association for just on fifty years.

Dr. LUKE GERALD DILLON, O.B.E., who practised at Seaham Harbour for half a century and was medical officer of health for more than forty years, died on April 27 at Oxford, where he was living in retirement. Born in 1862, he was educated at the Jesuit College, Galway, and the Queen's University of Ireland, graduating M.D. and M.Ch. in 1882. Dr. Dillon was one of the pioneers of ambulance work in the North, and in recognition of his work was made an officer of the Order of St. John. He was gazetted surgeon captain 2nd Durham Volunteer Artillery Brigade in 1894, and retired with the rank of surgeon major. In 1914 he was placed in charge of recruiting for a large area around Seaham, and had medical charge of all troops in the district for the period of the war; he was also medical officer in charge of Seaham Hall Auxiliary Military Hospital and Seaham Infirmary. After the armistice he became demobilization officer at Seaham, and subsequently medical referee under the Ministry of Pensions. In 1912 Dr. Dillon was appointed a magistrate for Durham County,

and regularly attended the courts at Seaham, and he was chairman of the Durham County Panel Committee for twenty-one years in succession. As M.O.H. for Seaham he spared no effort to obtain better housing and a higher standard of living for the workers, and he was co-opted a member of the Health Committee of Durham County Council. On retirement from public office three years ago he was entertained to a dinner and presentations were made to him. He had been a member of the British Medical Association for forty years.

The Services

HONORARY SURGEON TO THE KING

The King has approved the appointment of Colonel W. J. Powell, C.I.E., I.M.S., Honorary Surgeon to the Viceroy of India, as Honorary Surgeon to the King, in succession to Major-General A. W. M. Harvey, I.M.S., who has retired.

DEATHS IN THE SERVICES

Major-General Sir (MICHAEL) THOMAS YARR, K.C.M.G., C.B., late R.A.M.C., died in a nursing home in London on April 24, aged 74. He was born at Cloughjordan, County Tipperary, on October 17, 1862, the son of Thomas Yarr, J.P., of Rathgar, Dublin, and was educated at French College, Blackrock, and in the Medical School of the Royal Irish College of Surgeons, studying subsequently at Paris and Vienna. He took the L.R.C.S.I. and L.K.Q.C.P. in 1882, and subsequently the F.R.C.S.I. in 1894. After filling the post of chief clinical assistant at the Royal London Ophthalmic Hospital, he entered the Army as surgeon on January 30, 1886, passing first into Netley. He attained the rank of colonel in the long war promotion list of March 1, 1915, became major-general on December 26, 1917, and retired in 1921. He had a more varied experience of service than falls to the lot of most Army medical officers. From 1890 to 1895 he was surgeon to the 1st Battalion of Coldstream Guards, and from 1895 to 1899 was seconded as Physician to the Crown Prince of Siam. He served in the South African War in 1900–1, taking part in operations in the Orange Free State, the Transvaal, and Cape Colony, and gaining the Queen's medal with four clasps. From 1903 to 1908 he was surgeon to the Governor of Bombay. He then served throughout the war of 1914–18, first as A.D.M.S. at Gallipoli, where he took part in the landing and in the operations of the 29th Division, and later as D.D.M.S. of the Egyptian Expeditionary Force, and at Malta, was mentioned in dispatches in the *London Gazette* of August 5, 1915, and received the C.B. in 1916, the K.C.M.G. in 1917, and was made a Chevalier of the Legion of Honour. After the war he was Inspector of Medical Services to the War Office, a post which involved much travelling abroad. Throughout his career he specialized in ophthalmology, and was the author of *A Manual of Military Ophthalmology* and of many papers and articles on his specialty. After retirement he served on the board of management of St. David's Home for Crippled Soldiers at Ealing, and of the Royal Normal School for the Blind at Norwood. He was unmarried.

Surgeon Commander JOHN WILLIAM TIGHE, R.N. (retired), died at Castlerea, County Roscommon, on April 4. He was the only son of Dr. J. M. Tighe of Melbourne, was educated in Dublin, and took the L.R.C.P. and S.I. in 1920, after which he entered the Navy. He became surgeon lieutenant commander on February 12, 1927, surgeon commander in 1935, and retired in May, 1936.

Lieut.-Colonel FREDERICK J. GARLAND, D.S.O., R.A.M.C. (ret.), died on April 29, aged 59. He was born on November 5, 1877, and was educated in the Royal University of Ireland, where he graduated as M.B., B.Ch., and B.A.O. in 1901. Entering the R.A.M.C. as lieutenant on January 30, 1904, he became major on July 1, 1915, during the war, and retired as lieutenant-colonel on May 18, 1929. Before entering the Army he served as a civil surgeon for over a year. He served in the war of 1914–18, when he was mentioned in dispatches in the *London Gazette* of July 21, 1917, and June 11, 1918, and received the D.S.O. in 1918. After retirement he was employed for some years at Lydd.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

At a congregation held on May 1 the following medical degrees were conferred:

M.B., B.CHIR.—*G. D. Pirrie, *A. B. Evans, *P. J. Wenger-Byrne, A. H. Knowles, N. A. Buxton, L. A. Collins, G. C. L. Pile, H. T. H. Wilson, F. I. Evans, L. N. G. Lytton, A. C. Blandy, A. A. D. La Touche, I. W. MacKichan, D. S. Scott, E. D. Hoare, R. J. Porter.

M.B.—*H. Sandeman Allen, *G. C. Milner, *H. C. Maclaren, *A. Monk-Mason Payne, *F. Bush, *J. F. Lown, *W. A. Briggs, *F. H. Morrell, *H. B. Dodwell, *C. M. Ryley, *D. A. Smith, A. B. R. Finn, E. O'D. C. Grattan, J. H. Moseley, D. R. Seaton, T. G. Armstrong, R. J. Buston, B. S. C. Gaster, A. M. Barry, A. M. Weston, C. E. R. Wood, H. K. Meller, E. Sharp, A. F. Bryson, F. Clifton, P. A. Walford, J. E. A. David, R. Colley, E. P. H. Drake, H. S. H. Gilmer, T. B. L. Bryan, R. E. K. Levick, J. R. G. Harris, R. B. Heisch.

* By proxy.

UNIVERSITY OF LONDON

The following candidates have been approved at the examination indicated:

POST-GRADUATE DIPLOMA IN PSYCHOLOGICAL MEDICINE.—(*With Special Knowledge of Mental Diseases*): G. A. FitzPatrick. *Part A:* G. L. Ashford, Augusta G. Harrison.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE

The course of study for the Diploma in Public Health covers a period of nine calendar months' whole-time work and commences on September 28. The fee is 54 guineas. One Fishmongers' Company Studentship, which is awarded annually, carries remission of fees for the course and the next examination for the studentship will be held on June 22 and 23. Applications to compete must reach the secretary, London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, London, W.C.1, by June 14. A fuller announcement appears in our advertisement columns this week.

UNIVERSITY OF DURHAM

At the summer convocations the honorary degree of Doctor of Science will be conferred on Sir Henry Dale, M.D., F.R.C.P., F.R.S., director of the National Institute for Medical Research, and the honorary degree of Doctor of Surgery on Mr. R. P. Ranken Lyle, Emeritus Professor of Midwifery and Gynaecology in the University.

The centenary of the foundation of the University will be celebrated at Durham on Thursday, July 1, and at Newcastle on the following day. Invitations are being issued to other universities and educational bodies to send representatives, and a number of honorary degrees will be conferred.

UNIVERSITY OF MANCHESTER

The Rockefeller Foundation has made a grant of £5,000, to be spread over four years, in support of the research work in biochemistry being carried out under the direction of Professor Heilbron.

Dr. Donal Sheehan has resigned his appointment as lecturer in neuro-anatomy on his appointment as Professor of Anatomy in the College of Medicine, New York University.

The conferment of degrees in science and medicine will take place on Saturday, July 10, in the morning.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

A meeting of the Royal College of Physicians of London was held on April 29, with the President, Viscount Dawson of Penn, in the chair.

The following were elected Fellows of the College:

Arthur Cecil Alport, M.D.Ed.; Thomas Pearse Williams, M.D. Lond.; William Noel Goldsmith, M.D.Camb.; Henry Fitzgerald Maudsley, M.D.Melb. (Melbourne); Lewis Ralph Yealland, M.D. Ontario; Francis Joseph Bentley, M.D.Durh.; Ernest Noble Chamberlain, M.D.Liverp. (Liverpool); Francis Wiremu Brian Fitchett, M.D.Ed. (New Zealand); Jeffrey Ramsay, O.B.E., M.D. Lond. (Blackburn); Frank Dutch Howitt, C.V.O., M.D.Camb.; Oscar Brenner, M.D.Birm. (Birmingham); Benjamin Branford Morgan, M.D.Ed. (Norwich); Douglas Kinchin Adams, M.D.Glas. (Glasgow); Percy Selwyn Selwyn-Clarke, *M.C.*, M.D.Lond.

(Nigeria); William Sydney Charles Copeman, M.D.Camb.; Sidney Smith, M.B.Lond., Brevet Lieut.-Colonel R.A.M.C. (Hong Kong); Edward Humfrey Vere Hodge, M.D.Camb., Lieut.-Colonel I.M.S. (Calcutta); Charles Cady Ungley, M.D.Durh: (Newcastle-upon-Tyne); Richard Desmond Curran, M.B.Camb.; Allan William Spence, M.D.Camb.; Robert Stevenson Aitken, M.B.New Zeal.; Arnold Ashley Miles; Harry Edward Mansell, M.B.Oxf.; Thomas Anwyl Davies, M.D.Lond.; Dame Louise McIlroy, D.B.E., M.D. Glas.; Edward Johnson Wayne, M.B.Leeds (Sheffield); Henry Ashbourne Treadgold, C.B.E., M.D.Lond., Group Captain R.A.F.M.S. (Elstree); Harold Kingston Graham-Hodgson, C.V.O., M.B.Durh.; Reginald St. Alban Heathcote, M.D.Oxf. (Cardiff); Philip Graham Stock, C.B., C.B.E., M.B.Bristol; John Frederick Wilkinson, M.D.Manch. (Stockport); and under By-law XXXVIII (*b*) Ernest Laurence Kennaway, M.D.Oxf., D.Sc.Lond., F.R.S.; William Porter MacArthur, D.S.O., O.B.E., D.Sc., M.D.Belf., Major-General, A.M.S.

Viscount Dawson of Penn was re-elected representative of the College on the Governing Body of the British Post-Graduate Medical School, and Dr. Archibald Malloch the representative at the celebration (at Philadelphia) of the fifteenth anniversary of the founding of the College of Physicians of Philadelphia on May 14.

The following were admitted Members of the College:

Mohammed Attia Abboud, M.B.Cairo, Sitaram Damodar Ambegaonker, M.B.Bomb., Major John Bennet, M.D.Ed., R.A.M.C., Roy Clarke, M.B.Oxf., Ewan Lawrie Corlette, M.B.Sydney, Guy Pascoe Crowden, L.R.C.P., Emmanuel Andrew Danino, M.D.Lond., Leslie John Davis, M.D.Ed., William Alexander Elliott, M.B.Camb., Ahmed Mahmoud El Nakah, M.B.Cairo, Noel Gordon Harris, M.D.Lond., George William Hearn, M.B.Lond., Charles Anthony Hinds-Howell, M.B.Oxf., Kenneth Tamworth Hughes, M.B.Sydney, Archibald Louis Percy Jeffery, M.D.Lond., Manoah Robert Kark, L.R.C.P., Heneage Marchant Kelsey, M.B.Lond., Frederick Harold Kemp, M.B.Birm., Mrs. Phyllis Margaret Kerridge, L.R.C.P., Samuel Lazarus, M.D.Glas., Archibald John McCall, M.B.Liverp., Murray McGeorge, M.B.New Zeal., Richard Alfred Amyas Pellew, M.B.Adelaide, William Gwynfryn Rees, M.B.Oxf., John Samuel Richardson, M.B.Camb., Charles Ronald St. Johnston, M.B.Birm., Joseph Smart, M.B.Camb., Seth Kenneth Squires, M.B.Lond., Stephen James Lake Taylor, M.B.Lond., Henry Renwick Vickers, M.B.Sheff., Denis John Williams, M.D. Manch., Reginald Alexander Wilson, M.D.McGill.

Licences to practise, and special diplomas, were granted; the names will appear next week.

BRITISH COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

At the quarterly meeting of the Council, held in the College House on April 24, with the President, Sir Ewen Maclean, in the chair, the following were promoted to the Fellowship and formally admitted by the President. O'D. T. D. Browne, Dublin, J. R. C. Canney, Cambridge, R. H. J. M. Corbet, Dublin, *T. F. Corkill, Wellington, New Zealand, *H. D. De Sa, Bombay, Charlotte A. Douglas, Edinburgh, H. H. Evers, Newcastle-upon-Tyne, A. O. Gray, London, S. B. Herd, Liverpool, *Charlotte L. Houlton, Delhi, A. C. McAllister, London, W. McK. H. McCullagh, London, *G. H. Mahony, Patna, P. Malpas, Liverpool, *M. Mehta, Bombay, D. Miller, Edinburgh, *C. MacD. Plumptre, Madras, F. Roques, London, H. H. Seymour, Hove, H. L. Shepherd, Bristol, J. E. Stacey, Sheffield, *B. H. Swift, Adelaide.

The following were admitted to Membership of the College:

G. S. Adam, Australia,*R. F. W. K. Allen, Nagpur, Doris C. Bates, Australia, *F. A. Bellingham, Australia, Margaret G. Bott, Nottingham, *Edith M. Brown, India, H. H. Caple, Canada, W. Clement, Glasgow, D. I. Finlayson, Edinburgh, W. F. Flint, Glasgow, U. Pati Gupta, India, W. Hunter, Newcastle-upon-Tyne, C. W. A. Kimbell, New Zealand, W. A. Liston, Edinburgh, Barbara M. Macewen, London, Margaret M. McDowall, Halifax, K. A. McGarrity, Australia, G. Maizels, Hull, *Gladys H. Marchant, Lucknow, C. F. Marks, Australia, H. S. Morton, London, B. C. Murless, London, L. Rich, Manchester, C. E. B. Rickards, Manchester, G. W. Robson, Canada, J. M. Sanson, Edinburgh, J. W. Schabort, South Africa, C. P. Scott, London, *Lydia I. H. Torrance, Calcutta, W. Waddell, South Africa.

At the annual general meeting of the College, held on April 24 with the President, Sir Ewen Maclean, in the chair, the following were elected to the Council in place of those retiring by statutory rotation. *Representatives of the Fellows:* Mr. J. P. Hedley, Professor E. Farquhar Murray, Professor Gilbert Innes Strachan, Professor William Gough, and Mr. D. G. Madill. *Representatives of the Members:* Mr. J. W. G. H. Riddell, Mr. John Sturrock, and Mr. A. W. Spain.

* *In absentia.*

Medical Notes in Parliament

Lord Astor gave notice that in the House of Lords on May 5 he would draw attention to the report of the Advisory Committee on Nutrition to the Ministry of Health.

The second reading of the Methylated Spirits (Scotland) Bill will be moved in the House of Lords on June 1 by Lord Kinnaird.

The House of Commons this week discussed the Live-stock Industry Bill, and read it a third time on May 4. A debate was arranged on the salary of the Secretary for Mines, and the adjournment motion was taken on May 6. The Government has arranged for the House to rise till May 24.

Progress of Bills

The Woodhall Spa Urban District Council Bill to provide for the utilization and development of the mineral springs in the district of the council, has passed the House of Lords, and was read a first time in the House of Commons on April 28.

The Protection of Animals Bill, "to protect animals which, though nominally wild, are, in fact, kept in captivity or confinement and released for the purpose of being hunted or coursed," was read a first time in the House of Commons on April 28.

The Hydrogen Cyanide (Fumigation) Bill was reported in the House of Lords with one amendment on April 28. It was read a third time on May 4 and passed.

The Physical Training and Recreation Bill passed through a Standing Committee of the House of Commons on April 29 with slight amendments.

The Royal Assent was given in the House of Lords on April 29 to the Army and Air Force (Annual) Act, to the Education (Deaf Children) Act, and to the Edinburgh Royal Maternity and Simpson Memorial Hospital Order Confirmation Act.

Factories Bill in Committee

On April 20 the Standing Committee of the House of Commons which is examining the Factories Bill resumed discussion of Clause 63 (General conditions as to hours and employment of women and young persons), and the Chairman allowed a general debate on a series of amendments proposed by Mr. Alfred Short which collectively would reduce the hours of labour for women and young persons to 40 in any week. Mr. SHORT said women were more prone to accidents than men, and now that workshops were being brought into the Factories Bill there would be a further increase in accidents. The Home Secretary had already given statistics showing that the accident rate for boys and girls was much higher than for men in 1928, and that in the cotton district the accidents occurring to women and young persons while cleaning machinery were twice and thrice the proportion of accidents occurring to men. It was stated that in London alone 5,364 boys under 16 worked seventy-two hours a week. If children from 14 onwards were to work forty-eight hours a week and children over 16 forty-eight hours a week plus overtime, what opportunities would they have for recreation of the kind which was proposed in another Bill introduced by the Government?

Wing Commander WRIGHT, as an employer with a factory in which much repetitive work was done, said employers could get the same sort of production with much shorter hours. One of the problems of the day in Birmingham was that employers could not get juveniles for instruction in the trade because they were lured away into industries which paid wages higher than they would receive during their

period of instruction. When they arrived at a certain age and were thrown out on the streets they were useless and had a wrong mentality.

WORKING HOURS OF JUVENILES UNDER 16

Sir JOHN SIMON said he had studied this subject at the Home Office and had been making inquiries for some time. As far as the present law was concerned in the matter of permitted hours, young persons between 14 and 18 and women of any age were all treated on a level. The hours at present permitted for women and young persons were fifty-five and a half in textile factories and sixty in other factories. In most cases these hours were never touched. At present there was an agreed working week—say of forty-eight hours—and in addition a large quantity of overtime, which might extend over the whole year. The present Bill contained a gradation as regards hours, and it was for the Committee to decide whether that gradation was steep enough. There was a statutory limit of forty-eight hours a week for women, with permissive overtime limited both in number of hours and number of weeks. For young persons between 16 and 18 the hours were forty-eight a week with a more limited provision concerning overtime, and for persons between 14 and 16 there could not be any overtime. Then came the question whether the Committee could do better than in the Bill as regards juveniles between 14 and 16. He hoped that they could. In the recent Shops Act forty-eight hours was deliberately fixed for young people between 14 and 16 in shops. In the unregulated trades, such as the work of page boys in hotels, boys working lifts, and so on, forty-eight hours had been recommended for juveniles between 14 and 16. Therefore the Bill did not lag behind recent standards either adopted or recommended, but the Committee ought to endeavour to go further.

The problem of interdependence of juvenile and adult work in the cotton industry was difficult, and if a substantial difference in the number of hours worked by youthful helpers and others was suddenly decided upon, very serious reorganization would be required in those industries. He had received help from the Factories Department in this matter and had begun to make inquiries outside in various industries. Before the Bill left the House of Commons he would like to see a reduction in the permitted hours of juveniles between 14 and 16. He had asked the medical advisers to the Home Office whether they thought the existing forty-eight hours could be said to be injurious to health, and they replied that on present information this could not be said, though they would be glad to see more time for leisure and recreation. The Committee must remember that when it talked about forty-eight hours for these young persons, it meant working that number of hours week in, week out, with the exception of very limited holidays and at times when young persons did not feel as fit as usual. That had to be borne in mind, even although his impartial advisers could not say that a forty-eight-hour week for these juveniles proved injurious to health.

HOURS TO BE REDUCED

Mr. GIBBINS asked whether the Minister's medical advisers when suggesting that forty-eight hours a week between 14 and 16 was not injurious had had regard to the consequences later in life for young persons who worked those hours. Sir ERNEST GRAHAM-LITTLE asked whether Sir John Simon knew the unanimous opinion expressed in the medical press on this subject.

Sir JOHN SIMON said, on general grounds, it would be better to get the hours reduced, and he would endeavour to secure on the floor of the House that the Bill was altered to provide that for juveniles between 14 and 16 years of age the maximum permitted hours of working should be reduced by statute beyond what was provided in the Bill. He had not yet sufficient information on what the new number of hours should be. It would not be possible to introduce the provision as early as other provisions in the Bill, and there must be time for important industries to reorganize, but they could possibly bring the improvements into force within two years. They must leave to an industry the opportunity of proving, if it could, that in each case a figure differing from the new statutory figure—but not necessarily as much as forty-eight—was justified. The industry would have to prove: first, that the hours could not reasonably be regarded as injurious to the health of young people; secondly, that the proper carrying on of that industry made it desirable that young people should work these longer hours side by side with their elders; and, thirdly, that juveniles would be engaged in such work as would familiarize them with and train them for processes in which the older people were employed and would be likely to lead up to their employment as adult workers in those processes.

Mr. SILKIN asked if the modified proposals would apply only to children between 14 and 16. Sir JOHN SIMON replied that this was so. Mr. VIANT said the Opposition were disappointed at the speech of the Home Secretary. The Committee ought to be ready to limit the hours of labour to forty for young persons, and the industrialists would fall into line.

The discussion was adjourned until April 22, when Sir JOHN SIMON said that on further reflection he did not think it would be a good plan for the Committee to pass the Bill back to the House without making any adjustment in the matter of juveniles under 16 and to wait for the Report stage for new proposals to be tabled. The modifications he had sketched out would come into force after an interval possibly of two years, and would have to be expressed in a clause which provided that after that interval the figure 48 would be altered to a smaller one. That could properly be done in a new clause which would follow the one on the general conditions as to hours of employment of women and young persons, and he undertook that the Government would put down a new clause during the Committee stage.

Mr. W. W. WAKEFIELD said the new clause would deal only with young persons from 14 to 16, but the progress of education was such that before long young persons under 15 would not enter industry, and the new clause, therefore, would deal only with persons between the ages of 15 and 16. He asked the Home Secretary to reconsider the hours of work of young persons of 16 to 18.

MEDICAL OPINION

Sir ERNEST GRAHAM-LITTLE said medical and educational arguments made a special class of the children from 14 to 16 years. That class was relatively small, and would be smaller in the near future. Medical opinion unanimously wished to restrict the hours of labour of children from 14 to 16 years. In that period the whole structure of the child, physical and psychological, changed. The mental and physical state of the child in those years was in turmoil. The child ought not to be in a factory at all. When the child left school at 14 years of age and went into a factory he was unfitted for this complete break and soon lost the keenness and enthusiasm which he acquired in school. The work done by children in factories at that age was not a preparation for trade, and there was a great period of indolence instead of mental activity because of the absence of incentive. At 18, when the children were thrown again on the labour market, they were lifeless persons, whereas the child at 14 was intellectually curious and anxious to learn more.

The Committee then divided on the amendment moved by Mr. Alfred Short on April 22 to insert the word "forty" for the words "forty-eight," and this was defeated by 24 to 15.

Mr. RHYS DAVIES moved an amendment to provide that the period of employment for women and young persons should not exceed ten hours in any day instead of the eleven hours specified in the Bill. Mr. GEOFFREY LLOYD said Mr. Rhys Davies confused the hours of employment with the period of employment. The period of employment was made up of the hours of employment plus intervals for meals and rest. The amendment would confine the employment period to a shorter time by restricting meal times and rest intervals. The amendment was withdrawn.

The Committee agreed to an amendment substituting 7 a.m. for 6 a.m. as the hour at which employment of women and young persons in factories might begin. He said reports of

inspectors showed that nowadays factory employment did not begin before 7 a.m. unless there was a special reason for doing so, and the Government was prepared to agree that it should not begin before that hour except in special cases authorized by the Home Secretary. A new clause would be moved later on dealing with exceptions as to the hours of commencement.

Mr. SILKIN moved to substitute 6 p.m. for 8 p.m. as the hour at which on days other than Saturdays the employment of women and young persons in factories should cease. He said this was to meet the concern felt for the physical fitness and continued education of young children. Mr. BROAD approved the application of the amendment to women, of whom a great proportion had to keep their homes going, do shopping and housework, and look after children or even maintain disabled husbands although they worked in factories. Lady ASTOR supported this argument, and said that girls all over the country were going to factories from long distances as the new housing estates had not been built around the factories.

Mr. GEOFFREY LLOYD said the hour of stopping work was governed in practice by the hour of starting. In a number of factories the work started relatively late at 8.30 a.m. or 9 a.m., and in other factories longer meal times were given, or both circumstances prevailed, so that work continued until 6.30 p.m. or 7 p.m., or perhaps until 7.30 p.m. or 8 p.m. on some days for the convenience of the workers. These conditions were largely settled in consultation with the workpeople.

There was some further discussion, after which Mr. LLOYD said he was impressed by the way in which members had put their objections. It was not reasonable to say that an adult woman could not start work at 8.30 a.m. or 9 a.m. in any circumstances, but young persons had a special case. If the Committee would pass the clause as it stood the Home Office would reconsider it and ask the assistance of Opposition members in pointing out examples where the proposed hours would constitute an abuse. It was not safe to make a concession at this stage. Mr. Silkin's amendment was then withdrawn.

Mr. GRAHAM-WHITE moved to omit the words "or young persons" from a subsection of Clause 68, which provides that a woman or young person could be employed up to four and a half hours without an interval for meal or rest or up to five hours if a break of ten minutes was allowed in the course of the spell. He said this amendment was made in conjunction with the other amendment for limiting the spells of work for young persons to three and a half hours. Mr. LLOYD said the provision in the Bill was put in as a result of the experience of the Factory Department to provide the intervals and rest pauses which were necessary, and to avoid unnecessarily long rest pauses, which were resented by the workers concerned. As a result of work by the Medical Research Council these proposals had been incorporated in the Bill. The Committee negatived the amendment.

Sir ERNEST GRAHAM-LITTLE moved to substitute "three hours" for "four and a half" as the length of the continuous spell. He said it was established that spells of work of more than three hours were so long that the attention flagged, and the incidence of accidents was largely increased by inattention. Three hours was enough to exhaust the capacity of a child of 14 to 16. He asked whether it was not possible in this provision to separate women from children. There was no reason to separate women from men from the medical point of view, but reason to separate women from children. Mr. GEOFFREY LLOYD said the conclusion that three hours was the maximum spell that should prevail was not the conclusion to which the Industrial Health Research Board came after examination of sickness records and so on. The Board concluded that it was impossible to obtain reliable evidence that a change in the duration of work spells affected sickness rates. Therefore, medical opinion in this matter was divided. But reports of factory inspectors tended to show that it was not at the end of a period of work, even in regard to young persons, that accidents mostly occurred. They tended to occur about the beginning of work or during periods of maximum production.

Sir Ernest Graham-Little's amendment was negatived.

Mr. WHITE moved to leave out the permission allowing the working spell to be five hours with a ten-minute break, but this was defeated by 22 to 9. The Committee then adjourned until April 27.

INTERVALS FOR MEALS

When discussion was continued on April 27, Mr. SILKIN moved to provide that where young persons were employed during the hours of 11.30 a.m. and 2.30 p.m. an interval of not less than three-quarters of an hour should be allowed between those hours for dinner if taken in the factory or in a building of which the factory formed part, or of one hour if not taken in such buildings. Sir JOHN SIMON said the existing powers of the Home Office as regards welfare orders did not give an actual mandatory power to make directions on the length of the interval for meals. The amendment was negatived, and the CHAIRMAN then suggested that amendments on the paper dealing with the employment of women before and after childbirth should better be discussed as a new clause. Mr. GRAHAM WHITE and Mr. RHYS DAVIES agreed to this.

On the motion that Clause 68 as amended stand part of the Bill, Sir WALTER SMILES said that he had made inquiries in Blackburn from working people themselves, and found they preferred children to go to work before they were 15 and to work forty-eight hours a week. They pointed out that the children got better discipline in the factories than they seemed to do in the schools. Sir ERNEST GRAHAM-LITTLE said no part of the Bill aroused more attention from medical and educational authorities than the reduction of hours for young persons between 14 and 15, and if possible between 16 and 18. Sir JOHN SIMON said there would be later opportunities for debating this matter. By supporting the present clause Sir Ernest would promote the object he had in view. Lady ASTOR asked whether on the new clause the Committee could discuss the hours of those from 16 to 18. Sir JOHN SIMON said these had been discussed on Clause 68. The new clause would deal with persons between 14 and 16. Overtime for persons between 16 and 18 would arise on Clause 70.

The Committee approved the clauses amended by 34 votes to 18. Clause 69 (Notice fixing hours of employment) was ordered to stand part of the Bill without discussion.

THE QUESTION OF OVERTIME

On Clause 70 (Overtime employment of women and young persons over 16) Mr. ELLIS SMITH moved to leave out the reference to young persons who had attained the age of 16. After discussion Sir JOHN SIMON said the present legal hours for young persons between 16 and 18 in a year were 3,060, taking out one week for statutory holidays, but the Bill would reduce that total to 2,550 hours in a fifty-one week year, or ten hours a week less. Even this limited amount of overtime ought not to be allowed in an industry injurious to the health of young people, and a subsection of Clause 70 had been inserted to meet any case which might arise of increased hours over forty-eight being injurious to health. The Home Office had no interest in overtime, but he was not prepared to say that a young man of 17 was less capable of doing two or three hours' overtime than the average woman.

Mr. Ellis Smith's amendment was defeated by 34 to 19, and an amendment to provide that no young person should work more than fifty hours' overtime in any calendar year was also defeated.

The Committee adjourned till April 29. On resumption Mr. RHYS DAVIES moved that the overtime in the factory should not exceed in the aggregate 100 hours in any calendar year or six hours in any week, nor occur in more than thirty weeks in any calendar year. The chairman ruled the amendment out. Other amendments on the same subject were moved and withdrawn.

Sir JOHN SIMON moved an amendment to enable the Home Secretary to order an inquiry where representations were made that in any class or description of factory the overtime allowed under the Bill could be reduced without serious detriment to the industry. After the inquiry the Home Secretary, if satisfied, could make regulations reducing the amount of

overtime of women or young persons employed in this section of the industry. The amendment was carried by 23 votes to 12. The Committee agreed to a further amendment moved by Sir John Simon enabling him in special conditions to provide that no woman should be employed overtime for more than seventy-five hours, and no young person for fifty hours in any calendar year, and that neither, except as otherwise provided in regulations, should be employed overtime in a factory more than six hours in any week or in more than twenty-five weeks in the calendar year. The clause as amended was then added to the Bill by 22 votes to 9.

Clause 71 (Supplementary provisions as to overtime) was also added to the Bill after proposed amendments dealing with holidays had been defeated.

The Committee adjourned until May 4.

Maternity Services in Scotland

In the House of Lords on April 27 Lord STRATHCONA moved the second reading of the Maternity Services (Scotland) Bill, which has passed the House of Commons. He explained that the main purpose of the Bill was to improve the standard of domiciliary midwifery in Scotland. It aimed at providing a domiciliary midwifery service of high standard, securing adequate nursing and medical and specialist obstetrical services for women confined at home. Scottish medical men took a much larger part in midwifery practice than English doctors. The Bill took account of this fact, and was therefore not limited to a midwife service only. Under the arrangement proposed, every expectant mother who desired to be confined in her own home would be entitled to obtain the services of a midwife and a doctor. If the need arose, the doctor would be at liberty to call for the advice or help of an obstetrician of recognized standing. A thorough system of ante-natal and post-natal care would be a fundamental feature of the scheme. The idea was to have a co-ordinated service of the midwife and the doctor acting in co-operation, with the assistance, if need be, of the expert obstetrician.

Local authorities would be free to select the type of arrangements they preferred for securing the medical services, so long as the services were adequate. In some areas medical arrangements, other than those relating to obstetricians, might be made with all general practitioners in that area who were willing to take service on the terms offered by the local authority. In others the ante-natal and post-natal examinations might be carried out at the authority's clinics, and arrangements made either with all practitioners or a limited number of those in the area to provide the intra-natal service. No insuperable difficulty was anticipated in securing the services of qualified obstetricians in most areas. Adjoining areas might in some cases find it desirable to combine for the purpose of this specialist service. As in the case of the midwife service, the local authority was required to consult with any local organization representing the medical practitioners in the area before submitting its proposals for the Department's approval, and any such organization, if dissatisfied, might make representations to the Department.

The remuneration of midwives and doctors participating in the service would be a matter for negotiation between the local authorities and those with whom they proposed to enter into agreement, or their representatives. As those fees would be payable by the local authorities, one of the beneficial aspects of the scheme would be the elimination of "bad debts," which had hitherto been a source of much worry, particularly to midwives.

MEDICAL STUDENTS AND DOMICILIARY MIDWIFERY

Clause 6 of the Bill, the object of which was to prevent the attendance of unqualified persons on women in childbirth, contained a proviso exempting from the prohibition medical students and pupil midwives attending as part of their course of training. Fears were expressed, while the Bill was under discussion in the House of Commons, that under this exemption it might be possible for students and pupil midwives in the early stages of their training to undertake the delivery of women, and the Secretary of State for Scotland promised to look into the question whether there was any possibility that this might occur. He accordingly arranged a conference between the Department of Health and representatives of the university medical schools and of the maternity hospitals engaged in the training of midwives. The conference was held on April 23. The representatives of the training bodies assured the Department that the fears which had been expressed were groundless. As regarded medical students, they pointed out that the effect of the recommendations of the General Medical Council was that no student could undertake any practical midwifery work until the latter part of the fourth year of his curriculum, and before undertaking any domiciliary case he must have had adequate theoretical and practical instruction in midwifery, including the witnessing of demonstrations and the delivery of women under qualified supervision in a maternity hospital or ward. They assured the Department that the arrangements for training in every Scottish university were such as to ensure the safety of the patients, and had been recognized by the General Medical Council as complying with its requirements.

With regard to pupil midwives, the rules of the Central Midwives Board for Scotland secured that the pupil, before undertaking any domiciliary case, should not only have received sufficient theoretical and practical instruction, including demonstrations, but should have delivered, under qualified supervision, five patients in a maternity hospital or institution giving a course of training which had been approved by the Board. No pupil midwife was trained in Scotland otherwise than in accordance with those rules, which were subject to the approval of the Department of Health. It was clear, therefore, that neither medical students nor pupil midwives were sent out to the homes of the people until they had been properly tested out in the maternity ward, and had satisfied their teachers that they could be trusted with outside cases.

Lord STRABOLGI welcomed the Bill as a very long step towards a State medical service.

The Bill was read a second time.

In the House of Lords, on May 4, the Maternity Services (Scotland) Bill passed through committee without amendment.

Causes of Silicosis

Mr. JAMES GRIFFITHS asked, on April 29, whether the Secretary for Mines could give information regarding the claim made by the Institute of Mining and Metallurgy that recent researches made by the institute had resulted in discoveries capable of reducing the incidence of silicosis in mines by 90 per cent. Commander SOUTHBY, replying for Captain Crookshank, said that in a speech on April 22 the President of the Institute pointed out that among certain categories of miners on the Rand the incidence of silicosis in 1935 was 90 per cent. less than in the period 1920 to 1923. This improvement was attributable to preventive measures—for example, as regards drilling and shot-firing—which were already applied in the United Kingdom where risk of silicosis was to be apprehended, with the exception that in the United Kingdom there was no system of initial or periodical medical examinations. The President had also made mention of recent developments in research into methods of collecting and examining samples of dust from the air. This was not suggested to be a case of cause and effect, and the researches had not yet reached the stage of providing further preventive measures of practical application.

On May 4 Captain CROOKSHANK, replying to Mr. J. Griffiths, said that the South African regulations with regard to silicosis applied only to the scheduled mines which, generally, were the metalliferous and not the coal mines. As at present advised, he did not propose, as regards the coal mines of this country, to displace the method of differentiating requirements according to risk in favour of applying the same requirements to all these mines. The whole matter was, however, under consideration by the Royal Commission now sitting.

Training of Blind Persons

Sir KINGSLEY WOOD told Sir WM. JENKINS on April 29 that the test for the certification of blindness in England and

Wales was that the person was "so blind as to be unable to perform any work for which eyesight was essential." There was substantial uniformity in applying this test in accordance with criteria set out in a circular.

On the same date Mr. OLIVER STANLEY told Sir Wm. Jenkins that the number of blind boys and girls, as distinct from the partially sighted, who left the schools for the blind each year at the age of 16 was about 200. Practically all likely to be employable entered vocational courses of training. On March 31, 1936, the total number of boys and girls from schools for the blind who were being trained was 698. The Board of Education had no record of border-line cases of pupils in schools for the blind, but he agreed with the conclusion of the Committee on Partially Sighted Children that such children should be taught in schools or classes for partially sighted children, and that hardship was involved if they were educated and brought up as blind and had later to enter the sighted world, for which their education had not fitted them.

Midwives Act and Maternity Benefit

On May 3 Mr. DE ROTHSCHILD asked the Minister of Health whether he would introduce legislation to amend the National Health Insurance Acts so as to increase the amount of maternity benefit payable by approved societies, seeing that the Midwives Act, 1936, by making compulsory the attendance of a qualified midwife at all confinements, threw an added financial burden on insured contributors at such times. Mr. R. S. HUDSON said that the position of a woman entitled to maternity benefit as regards the arrangements for attendance at her confinement was not materially affected by the provisions of the Midwives Act, 1936. The National Health Insurance Acts had always contemplated that such a woman should be attended either by a medical practitioner or a qualified midwife. The Midwives Act expressly provided that the fees charged by local authorities for the services of their midwives might be remitted in whole or in part where the circumstances justified such remission. The Minister of Health did not, therefore, consider that the coming into operation of the new Midwives Act afforded any reason for the suggested amendment of the National Health Insurance Act.

Maternal Mortality.—On May 4 Mr. R. S. HUDSON, replying to Mr. G. Griffiths, said that for 1936 the deaths classified to pregnancy and childbearing in England and Wales were 2,302, while the deaths not classified to those causes but returned as associated therewith were 677. These figures were provisional.

Medical News

As the House of the British Medical Association (including the Library) will be closed on Coronation Day (Wednesday, May 12) all editorial communications and advertisements intended for the issue of the *British Medical Journal* of May 15 should reach the Editor and the Financial Secretary and Business Manager respectively by Monday, May 10, at the latest. The House of the Association will also be closed for the Whitsun holiday from 6 p.m. on Friday, May 14, to 9 a.m. on Tuesday, May 18 (Library 10 a.m.).

The House and Library of the Royal Society of Medicine will be closed for the Coronation and Whitsun from Wednesday, May 12, to Tuesday, May 18, both days inclusive.

The Glasgow University Club, London, will dine at the Trocadero Restaurant, W., on Friday, May 28, at 7.15 for 7.30 p.m., with Principal Sir Hector Hetherington in the chair. The Earl of Derby will be the guest of the chairman. Any Glasgow University men who, though not members of the club, desire to attend are requested to communicate with the honorary secretaries, 62, Harley House, London, N.W.1.

In our advertisement columns this week the London County Council invites applications for the appointment of a coroner for the County of London at a salary of £1,700 per annum.

The Rt. Hon. Arthur Greenwood, M.P., will perform the opening ceremony of the Metropolitan Borough of Hackney's Maternity and Child Welfare Centre at 136, Richmond Road, Hackney, to-day (Saturday, May 8) at 4 p.m.

We are asked to announce that the May meeting of the South-West London Medical Society (originally fixed for May 12) will be held at the Bolingbroke Hospital, Wandsworth Common, S.W., on Wednesday, May 19, at 9 p.m., when Dr. Wilfred Sheldon will speak on "Abdominal Distension in Children."

The Court of Inquiry appointed by the Minister of Labour to investigate and report on the issues involved in the London omnibus strike has been meeting daily this week at the Middlesex Guildhall. On Monday Dr. James Woodhall, chief medical officer at Manor House Hospital, N.W., was called by Mr. Bevin on behalf of the men, and gave evidence regarding complaints of irregularity of meals and irregular hours of work, the constant vibration of buses, fumes from motor engines, and the increased nervous tension attributable to the speeding up of services. Dr. H. B. W. Morgan, medical officer to the Trades Union Congress, referred to the number of complaints of gastric symptoms, etc., received from men in transport work, and classified these into digestive symptoms and neuromuscular symptoms. He shared Dr. Woodhall's impression that there was a higher incidence of gastric trouble among omnibus drivers and conductors than among other classes of workers. On Tuesday Dr. Millais Culpin, professor of medical industrial psychology at the London School of Hygiene and Tropical Medicine, gave evidence regarding his examination of a number of bus drivers at the Manor House Hospital diagnosed as suffering from gastric disturbances. He agreed with Mr. Bevin that his preliminary studies led him to the view that there was at least a strong prima-facie case for a thorough investigation into the effects upon the nervous system of speed, vibration, fumes, and inspection.

Queen Mary has appointed Mr. C. B. Goulden, O.B.E., F.R.C.S., as Surgeon Oculist, and Mr. Francis Donovan, C.V.O., L.D.S. R.C.S., as Surgeon Dentist to Her Majesty's Household.

The Council of the Royal Institute of Public Health has awarded the Harben Gold Medal to Sir Frederick Gowland Hopkins, O.M., F.R.S., F.R.C.P., professor of biochemistry in the University of Cambridge. The Harben Gold Medal is awarded triennially, under a trust created by the late Sir Henry Harben, to the person, irrespective of nationality, who, in the opinion of the council of the Institute, has rendered the most eminent services to public health. Past recipients of the gold medal include Louis Pasteur, John Simon, Max von Pettenkofer, Lister, Koch, Metchnikoff, Behring, Roux, Ronald Ross, Sherrington, and Kitasato.

According to the *Morning Post* of April 24 Mr. David Fingard, the American chemist whose formula for the treatment of asthma and bronchial complaints was left in this country in trust with Sir Harold Fawcus, Sir Arthur Stanley, and Sir Hubert Gough, was on April 23 refused admission to this country by the Dover alien immigration authorities.

On April 23 a portrait of himself, painted by Sir William Rothenstein, was presented to Dr. E. H. Colbeck at the City of London Hospital for Diseases of the Heart and Lungs, to mark his retirement from the visiting staff.

According to the American Hospital Association only 25 per cent. of all hospitals in the United States with 200 or more beds have a dental service, though 95 per cent. of the patients need dental attention.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111.

The TELEGRAPHIC ADDRESSES are

EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitiology Westcent, London.*

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*

MEDICAL SECRETARY, *Medisecra Westcent, London.*

The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh), and of the Office of the Irish Free State Medical Union (I.M.A. and B.M.A.), 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone 62550 Dublin).

QUERIES AND ANSWERS

Motoring Queries

"MEDICAL MOTORIST" (St. Helens) writes: I would be grateful for formulae of the following from my fellow medical motorists: (*a*) an effective corrosion inhibitor for the radiator, and (*b*) a reliable anti-freeze solution with the amount to be added.

Income Tax

Partnership—Separate Allowances

"PERPLEXED" inquires in what way he should approach the authorities so that he can claim his allowances without the necessity of their becoming known to his partners.

*** The income tax in the case of a partnership is assessable on the firm as such, and as the allowances must be shown on the firm's assessment notice it follows that to the extent to which the allowances are claimed on the form of return they will become known by inference to the other partners. We suggest that as regards any particular allowances which "Perplexed" wishes to remain unknown to his partners he should omit them from his declaration for assessment, pay the additional tax, and claim it back as a separate matter. It might avoid misunderstanding if he took an opportunity of explaining what he proposes to do, and his reasons for doing it, to his local inspector of taxes.

LETTERS, NOTES, ETC.

Minnitt's Apparatus

Dr. O'DONEL BROWNE (Dublin) writes: Although the "Queen Charlotte's" gas-air apparatus is already well known to many practitioners elsewhere, I hope it will soon be available for more general use in this country. It is unquestionably one of the most outstanding advances in present-day obstetrics, being excellent for maternity practice, whether in the private house or nursing home. My experience with this apparatus has been most satisfactory, and completely agrees with the several reports issued to date. The patients themselves, though possibly mistrustful of the apparatus at first sight, now feel they cannot recommend it too enthusiastically. Whether used by itself alone or in conjunction with twilight sleep the results have been excellent, and I have had no anxiety for any mother or child following its use. I sincerely hope that the rate of production of this apparatus will be accelerated in the near future and that this means of relieving the pains of labour will soon be available for, and accepted by, all doctors and nurses, both for their nursing home and private house maternity practices. I heartily congratulate the doctors and manufacturers on their enterprise and achievement.

Short-wave Therapy

Dr. H. J. TAYLOR writes from the St. John Clinic and Institute of Physical Medicine, London, S.W.1: May I draw the attention of your readers who are interested in short-wave therapy to the following quotation from a report recently issued by the American Council of Physical Therapy, a body which should certainly have its counterpart in this country. "Much of the work of the council in the past year has been confined to the consideration of so-called short-wave diathermy machines. In view of the deliberations the council believed it was justifiable to state, based on the present available evidence, the following conclusions: (1) there is no specific biologic action of high-frequency currents; (2) there is no specific bactericidal action; (3) the therapeutic effect is due to the heat produced. Elaborating these three conclusions, the council felt that the general practitioner should understand that when he buys a short-wave diathermy machine he is simply purchasing an apparatus capable of producing heat. In the light of available evidence it has absolutely no other specific action."

The Red Cross in Spain

The International Committee of the Red Cross reports that its appeal for funds and for gifts in kind for the relief of the victims of the civil war in Spain continues to meet with response from Red Cross societies in all parts of the world, but that considerably larger sums are required to meet the appalling needs. There is a gratifying recognition of the impartiality and prestige of the Red Cross by both parties to the conflict, and this has enabled its representatives to carry into effect many schemes for the relief of suffering. The committee continues to pay special attention to the question of help to prisoners. This work, more than any other, depends on the good will of the respective authorities, but visits to prisons by Red Cross representatives are now permitted in many localities and standardized parcels of food and clothing are distributed. Prison hospitals have been established, and in some cases the exchange of prisoners has been effected. One valuable aspect of the work has been the organization of intercommunication between the various members of families, separated by the exigencies of the war. Standardized post cards, approved by the censors of both parties, have been instituted, and consent obtained for their dispatch and distribution through local Red Cross bureaux.

The Veterinary Curriculum

Mr. M. HARVEY CLARKE, M.R.C.V.S., writes: In an interesting article in the *Journal* of April 10, under the heading "Veterinary Education," it is stated that "it appears that at some future time it will be necessary to extend the course of the veterinary curriculum from four to five years." May I point out that the course of the veterinary curriculum is five years, and has been so for some time, but it has recently been suggested that it may be necessary at some future time to extend this course from five to six years.

Air Raid Precautions Instruction in Wandsworth

Dr. H. B. DODWELL (Hon. Sec., Wandsworth Division of the B.M.A., 57, Albert Bridge Road, S.W.11), writes: May I remind those readers living in the boroughs of Wandsworth or Battersea who have not yet attended air raid precautions (anti-gas) classes that there will be two more courses, beginning on Friday, May 21, either afternoon or evening. If they wish to attend will they kindly get in touch with me.

Coronation Maps for Motorists

A map of London showing the "Coronation areas" and the roads leading to or avoiding them has been issued by the Automobile Association. On one side the map shows an area within twenty-five miles of the "Processional Route" and all important approach or "ring" roads. The position of all A.A. roadside telephone boxes is marked, especially those which will be "manned" by patrols from May 10 and equipped with copies of this and other maps and leaflets showing garages near railway stations on the outskirts of London. On the reverse side a large-scale street map of Central London shows the Royal Procession route, the Coronation area which will be closed to ordinary traffic and the roads affected by police regulations. An inset map also gives particulars of the traffic regulations in force when floodlighting takes place from May 12 to 17 inclusive. Members of the Automobile Association may obtain copies of the map free of charge from any A.A. office.